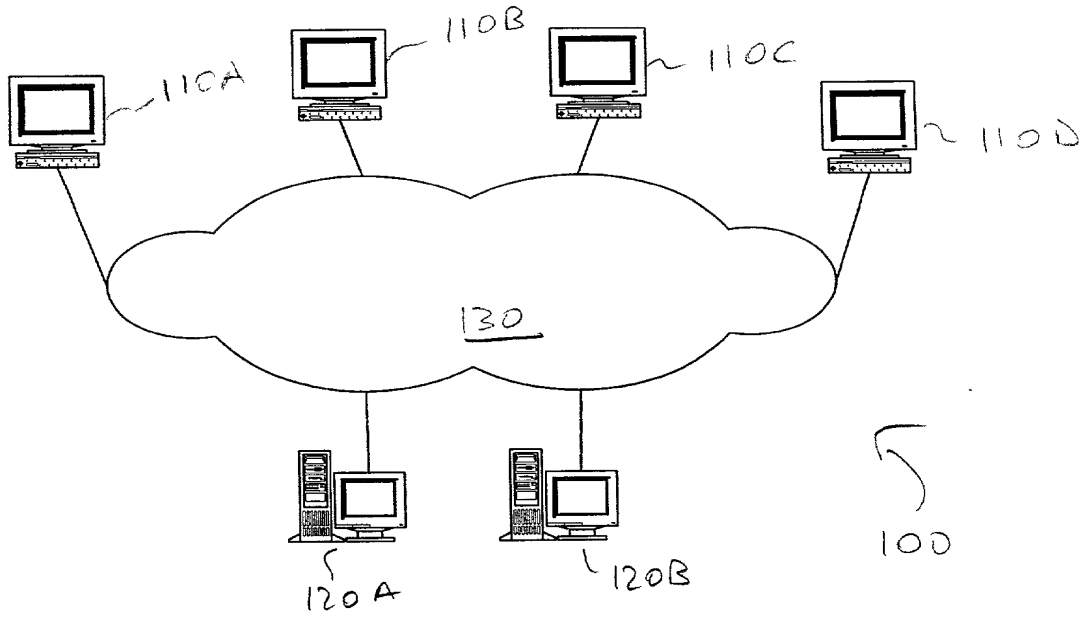


Fig. 1A
(PRIOR ART)

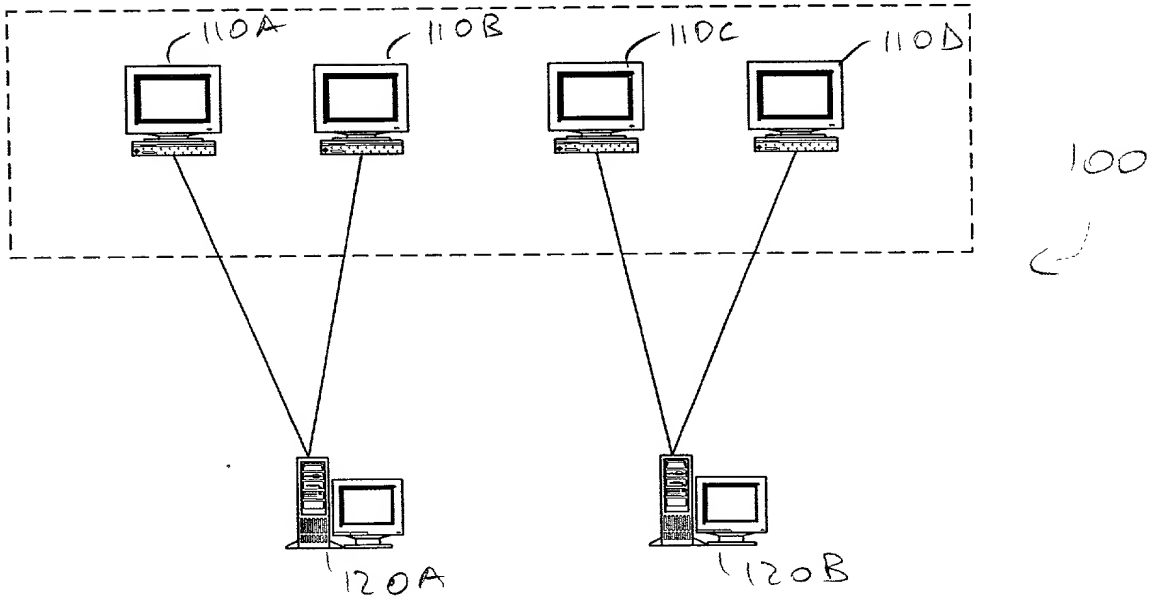


Fig. 1B
(PRIOR ART)

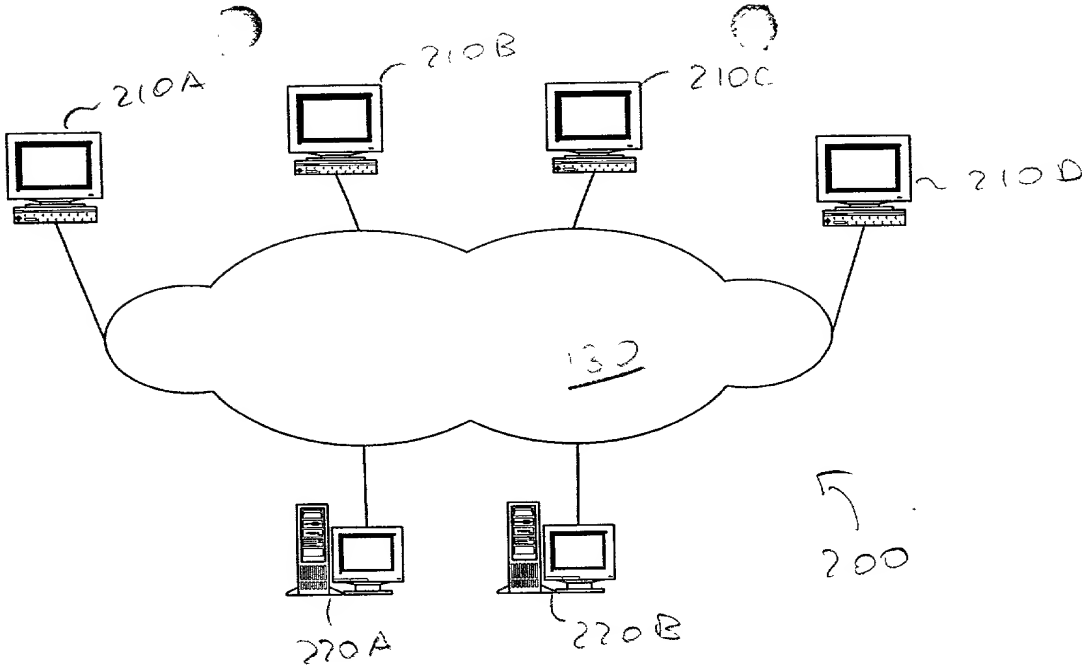

210A
210B
210C
210D
132
200
220A
220B

Fig. 2A

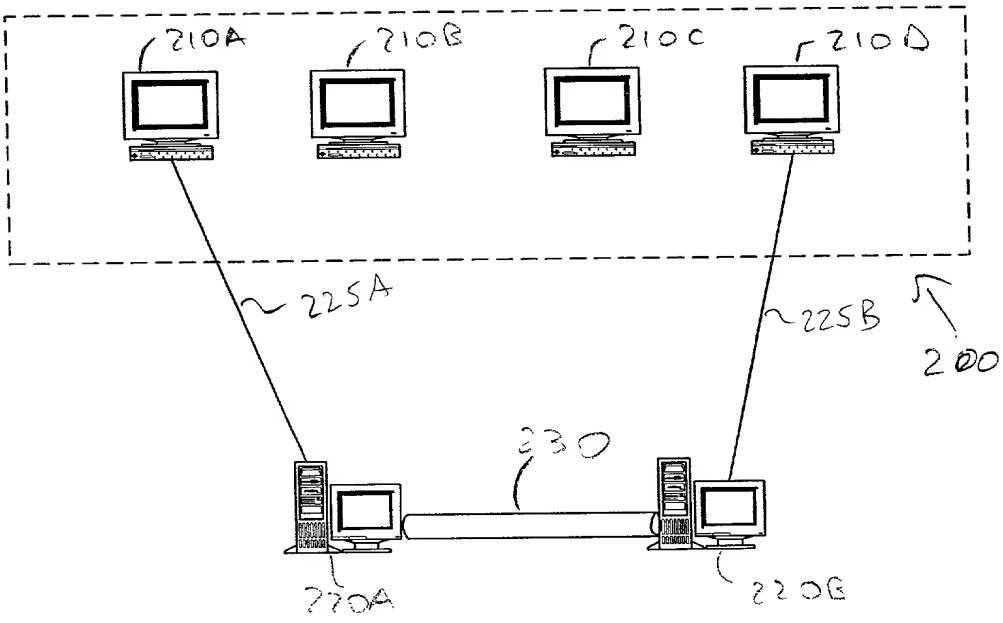

210A
210B
210C
210D
225A
225B
200
230
220A
220B

Fig. 2B

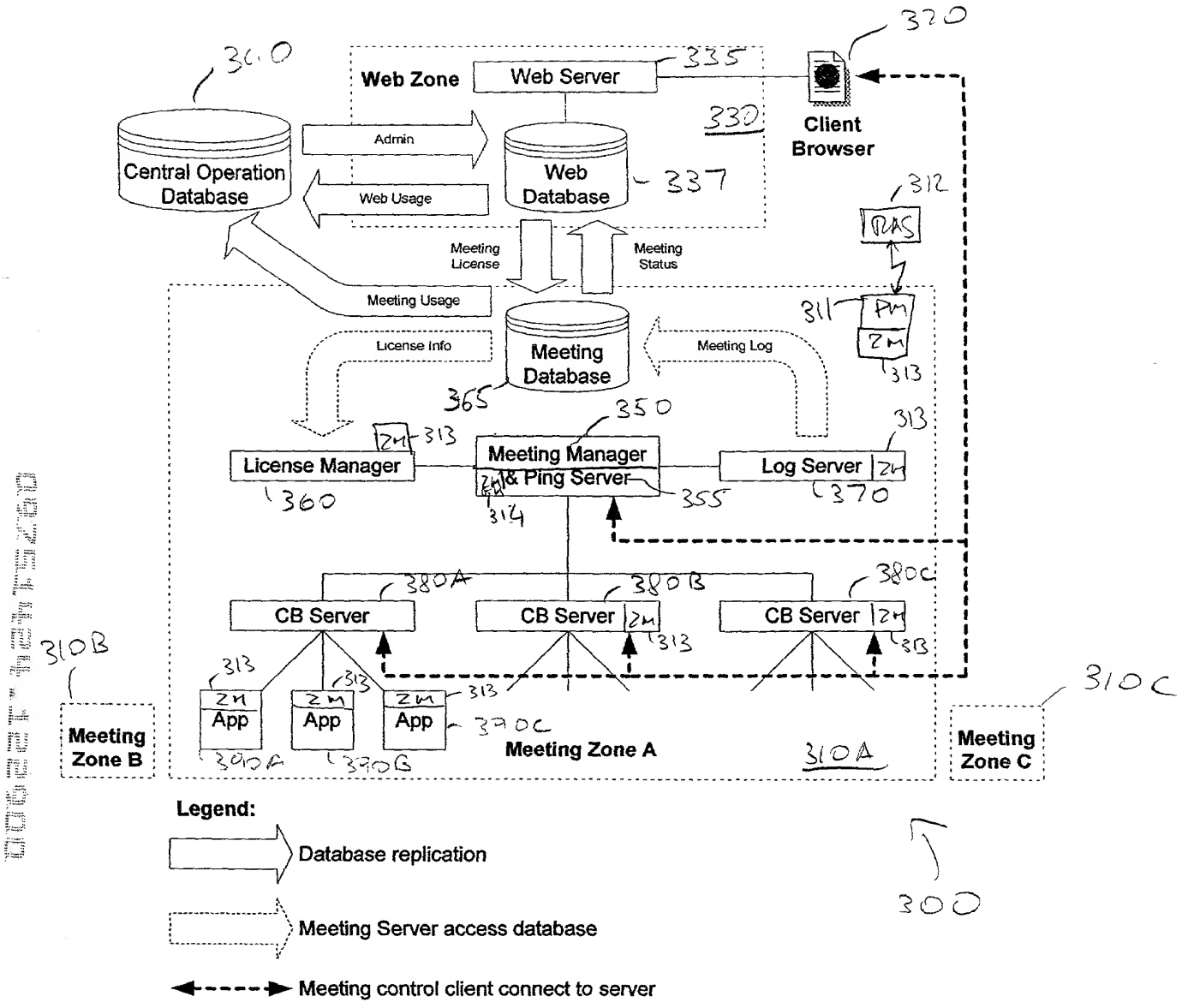

310
Web Zone
Web Server
335
320
330
Client Browser
Central Operation Database
Admin
Web Usage
Web Database
337
312
RMS
Meeting License
Meeting Status
Meeting Usage
311
PM
ZM
313
License Info
Meeting Database
Meeting Log
365
350
ZM
313
License Manager
360
Meeting Manager
& Ping Server
355
314
Log Server
370
380A
380B
380C
CB Server
CB Server
CB Server
310B
313
ZM
App
390A
390B
390C
Meeting Zone B
Meeting Zone A
310A
Meeting Zone C
310C
300
Legend:
Database replication
Meeting Server access database
Meeting control client connect to server

Fig. 3

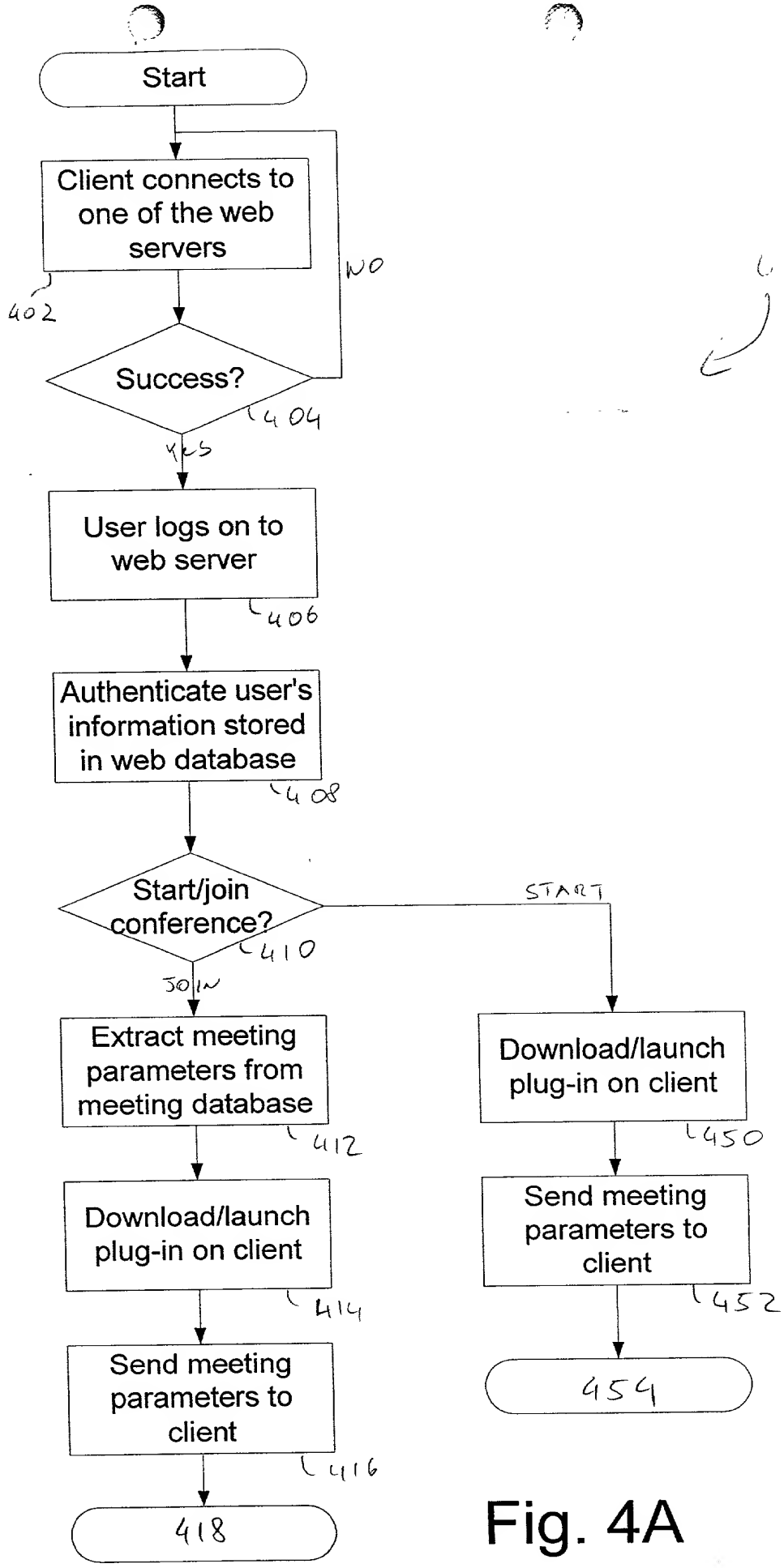

Start
Client connects to one of the web servers
402
NO
Success?
404
YES
User logs on to web server
406
Authenticate user's information stored in web database
408
Start/join conference?
410
START
JOIN
Extract meeting parameters from meeting database
412
Download/launch plug-in on client
414
Send meeting parameters to client
416
418
Download/launch plug-in on client
450
Send meeting parameters to client
452
454
400

Fig. 4A

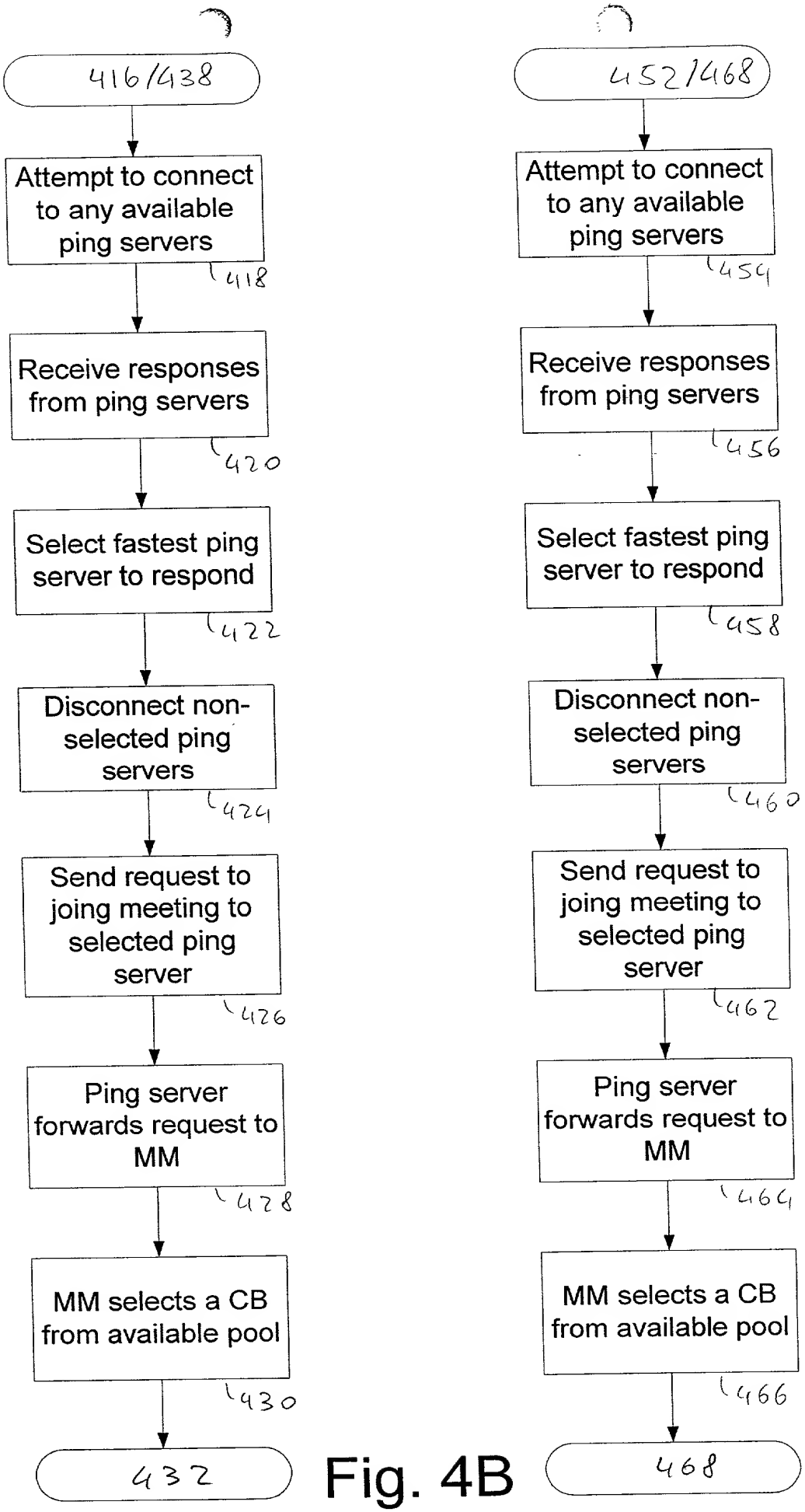

416/438
Attempt to connect to any available ping servers
418
Receive responses from ping servers
420
Select fastest ping server to respond
422
Disconnect non-selected ping servers
424
Send request to joing meeting to selected ping server
426
Ping server forwards request to MM
428
MM selects a CB from available pool
430
432
452/468
Attempt to connect to any available ping servers
454
Receive responses from ping servers
456
Select fastest ping server to respond
458
Disconnect non-selected ping servers
460
Send request to joing meeting to selected ping server
462
Ping server forwards request to MM
464
MM selects a CB from available pool
466
468

Fig. 4B

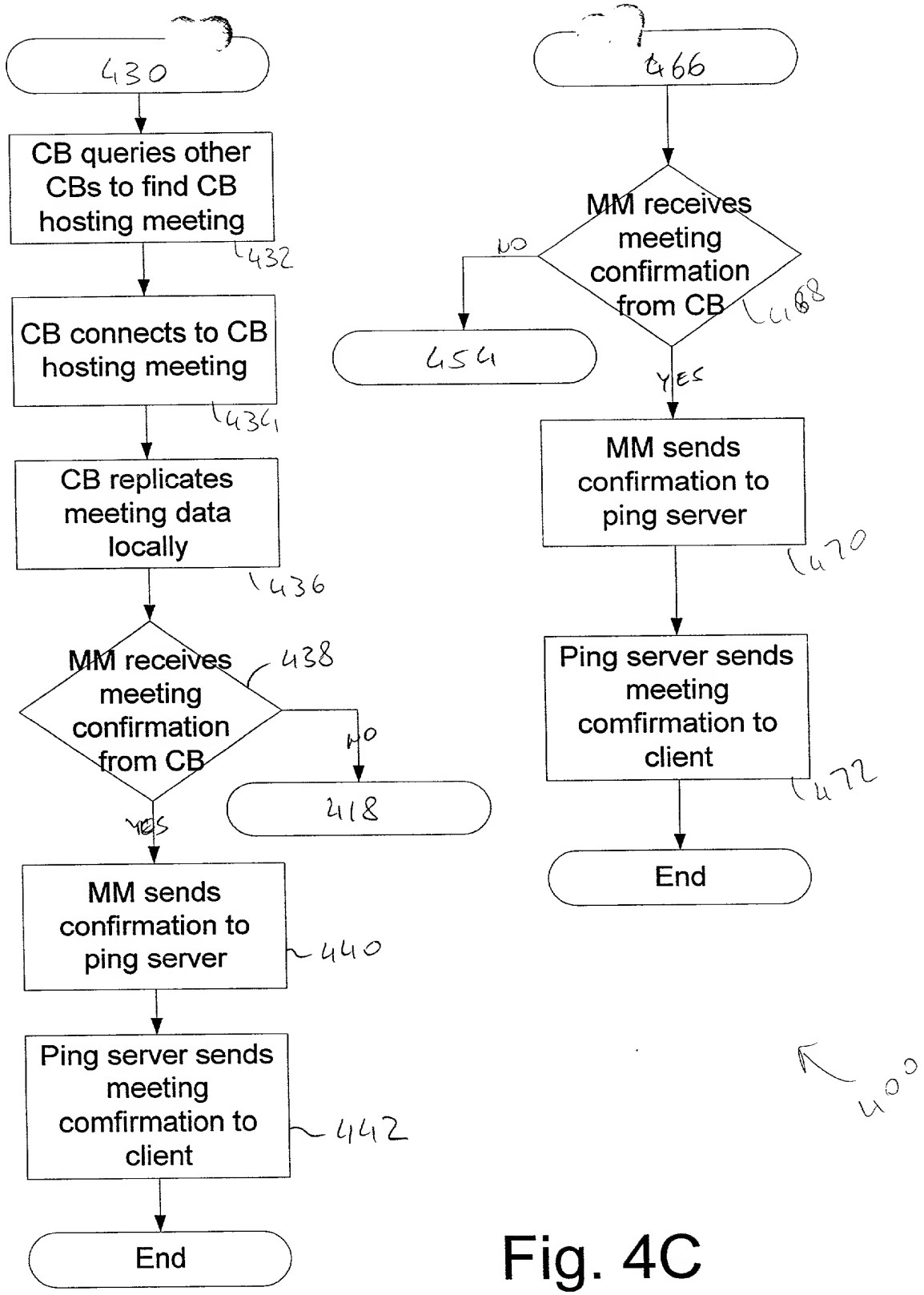

430
CB queries other CBs to find CB hosting meeting
432
CB connects to CB hosting meeting
434
CB replicates meeting data locally
436
MM receives meeting confirmation from CB
438
NO
418
YES
MM sends confirmation to ping server
440
Ping server sends meeting comfirmation to client
442
End
466
MM receives meeting confirmation from CB
468
NO
454
YES
MM sends confirmation to ping server
470
Ping server sends meeting comfirmation to client
472
End
400

Fig. 4C

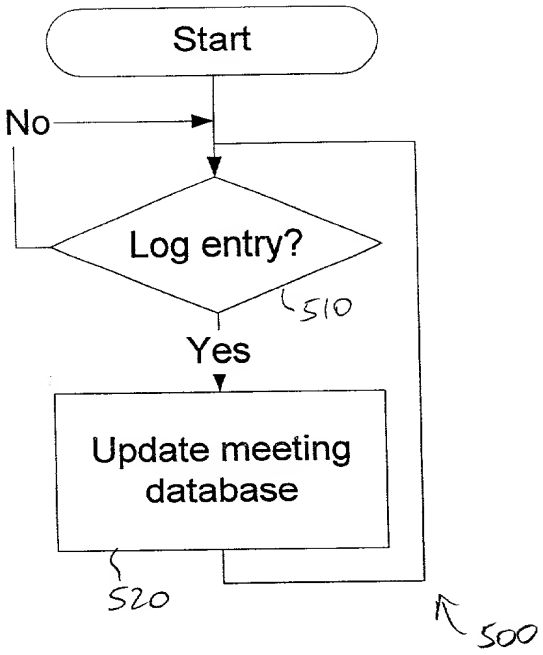

Start
No
Log entry?
510
Yes
Update meeting database
520
500

Fig. 5

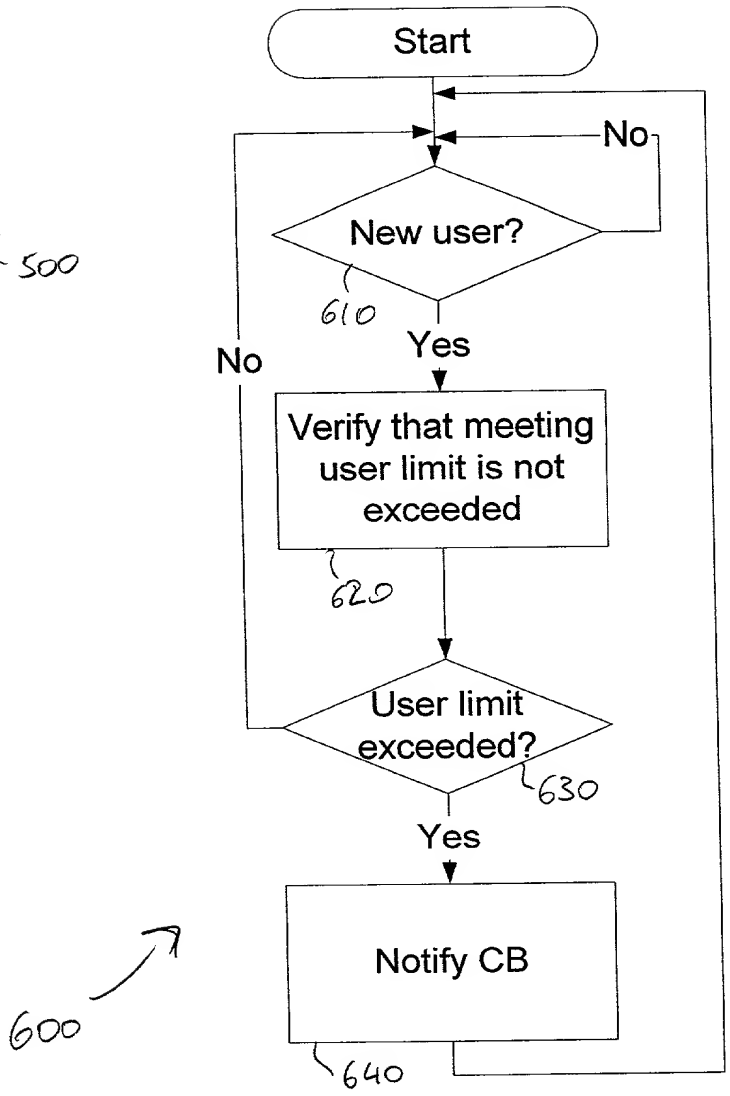

Start
No
New user?
610
Yes
No
Verify that meeting user limit is not exceeded
620
User limit exceeded?
630
Yes
Notify CB
640
600

Fig. 6

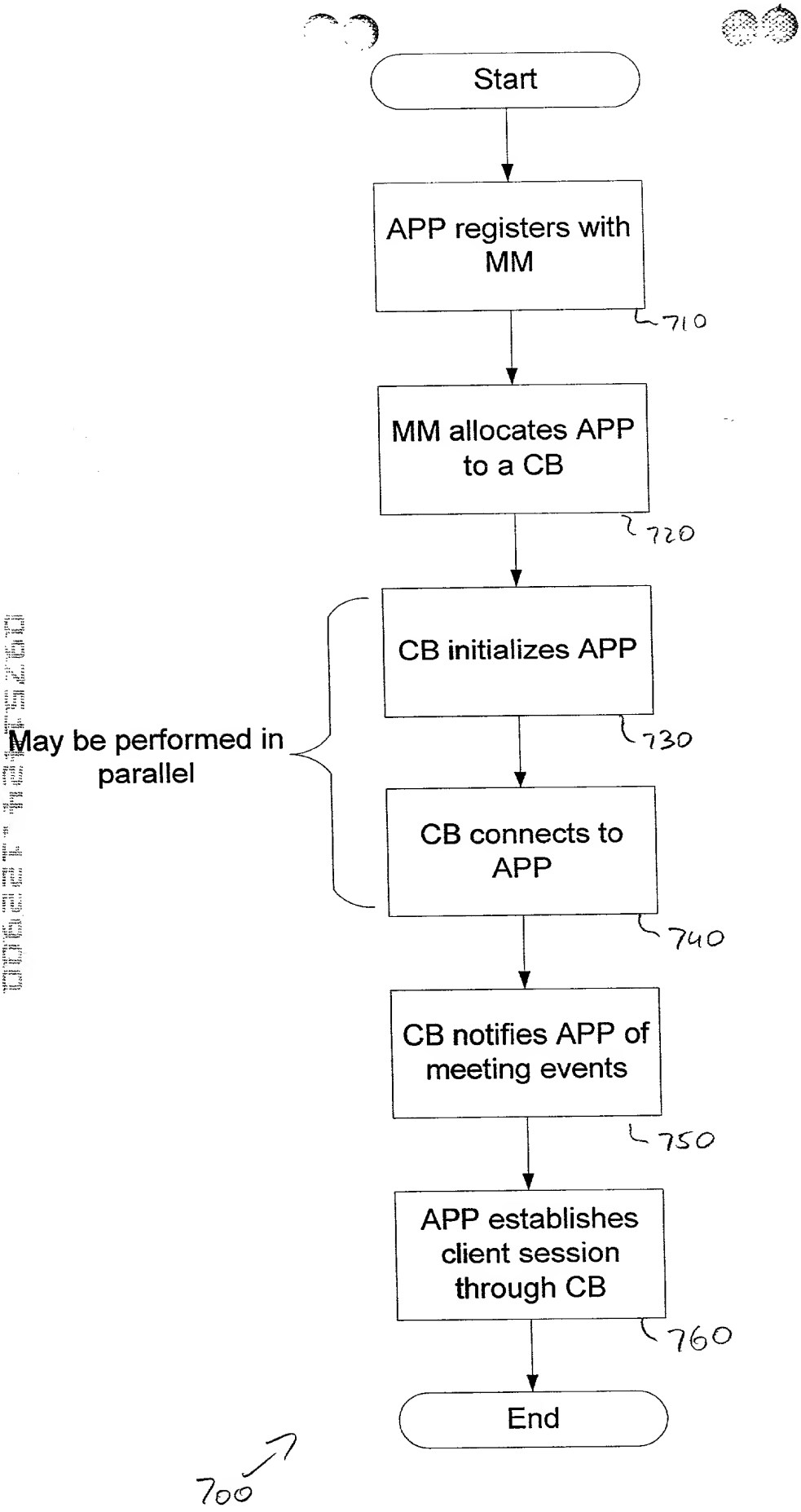

Start
APP registers with MM
710
MM allocates APP to a CB
720
CB initializes APP
730
May be performed in parallel
CB connects to APP
740
CB notifies APP of meeting events
750
APP establishes client session through CB
760
End
700

Fig. 7

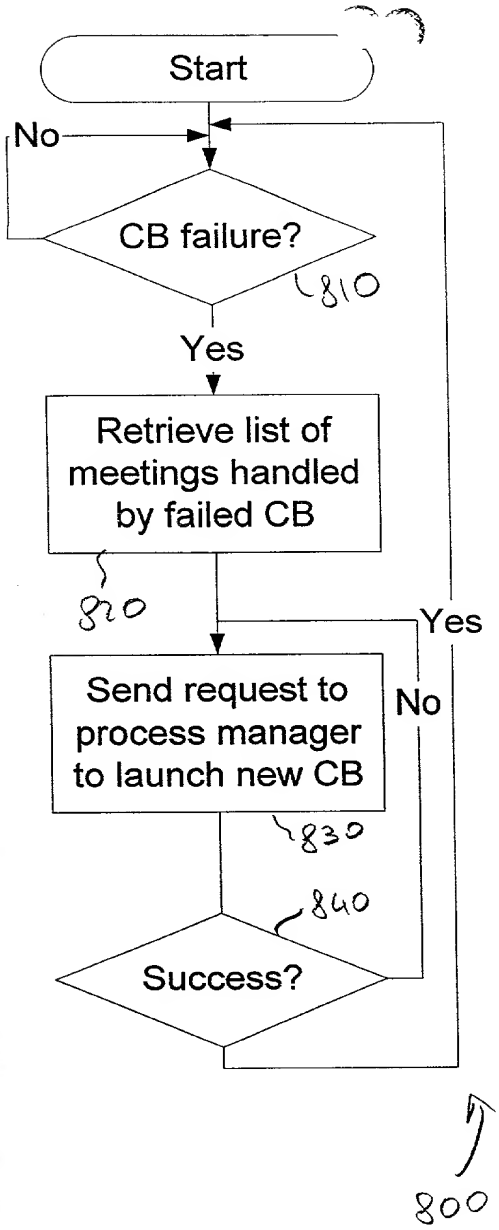

Start
No
CB failure?
810
Yes
Retrieve list of meetings handled by failed CB
820
Send request to process manager to launch new CB
830
Success?
840
Yes
No
800

Fig. 8

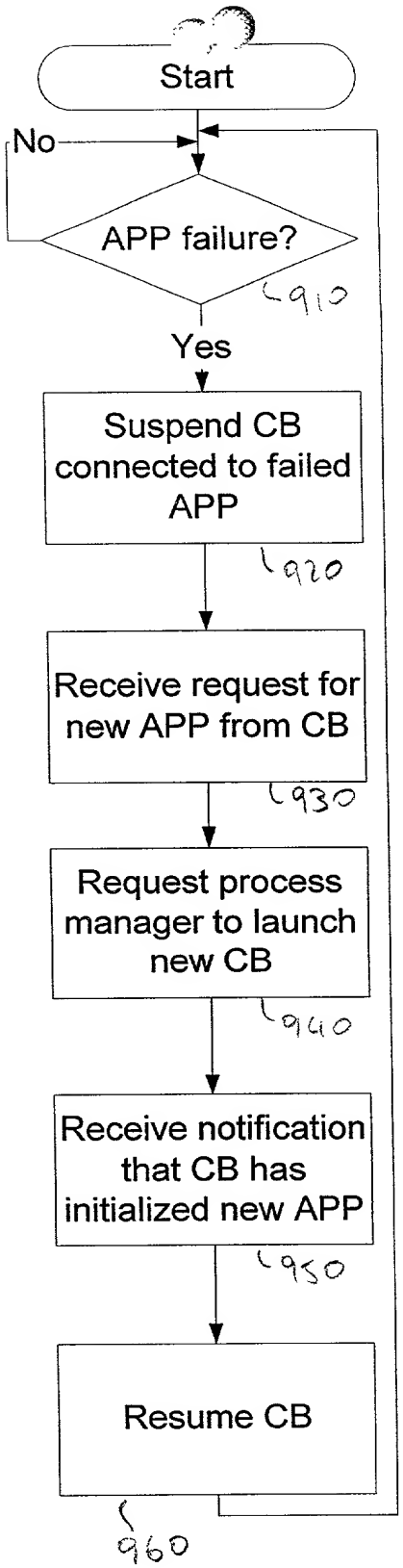

Start
No
APP failure?
910
Yes
Suspend CB connected to failed APP
920
Receive request for new APP from CB
930
Request process manager to launch new CB
940
Receive notification that CB has initialized new APP
950
Resume CB
960
900

Fig. 9

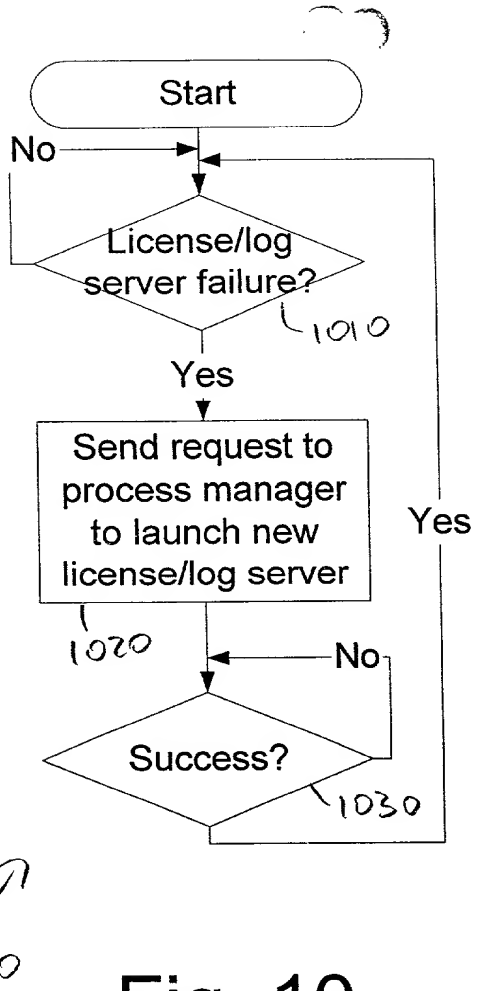

Start
No
License/log server failure?
1010
Yes
Send request to process manager to launch new license/log server
1020
Yes
No
Success?
1030
1000

Fig. 10

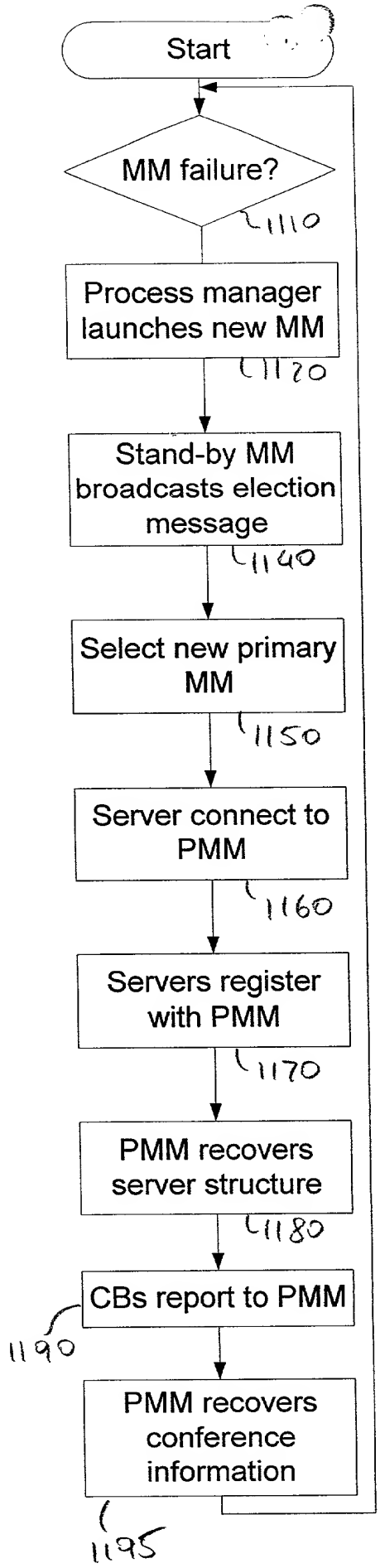

Start
1100
MM failure?
1110
Process manager launches new MM
1120
Stand-by MM broadcasts election message
1140
Select new primary MM
1150
Server connect to PMM
1160
Servers register with PMM
1170
PMM recovers server structure
1180
CBs report to PMM
1190
PMM recovers conference information
1195

Fig. 11

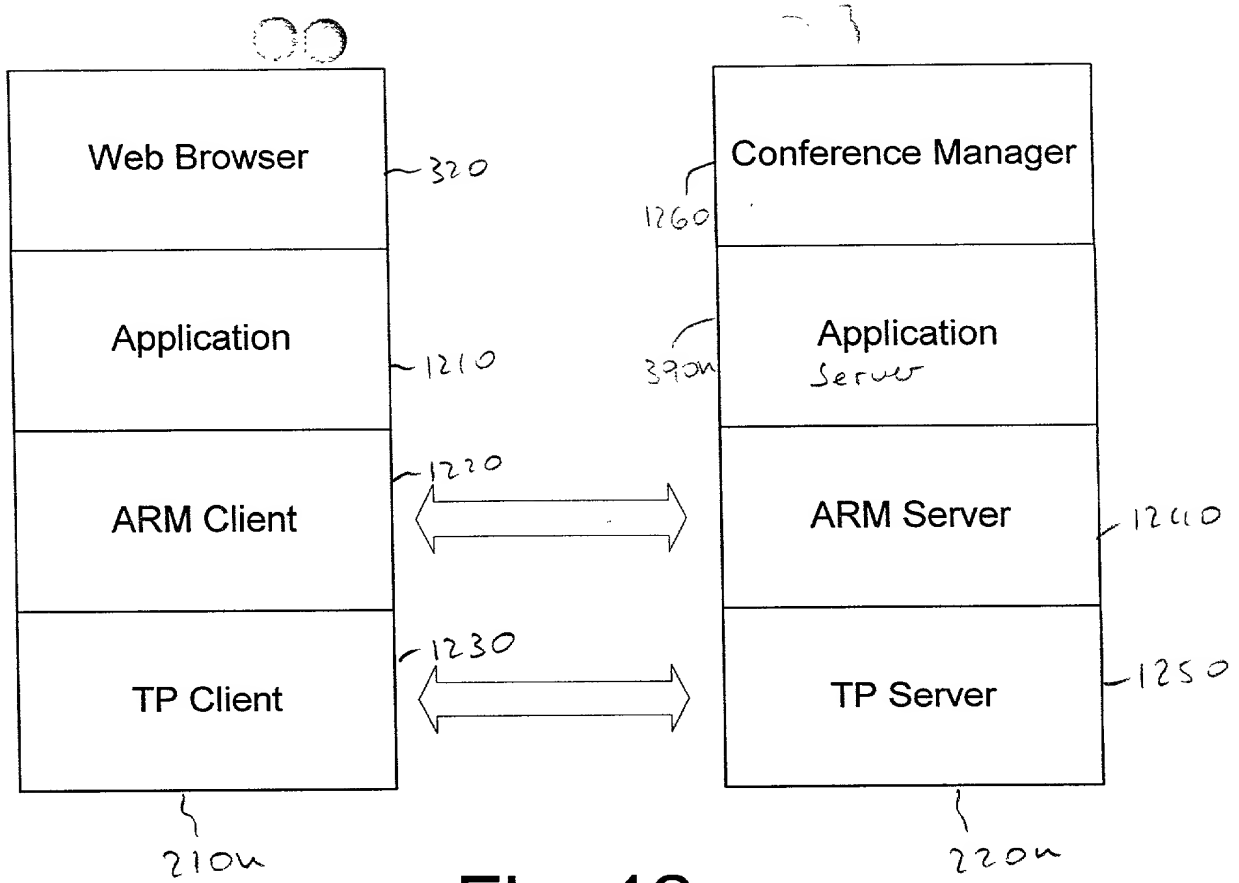


Fig. 12

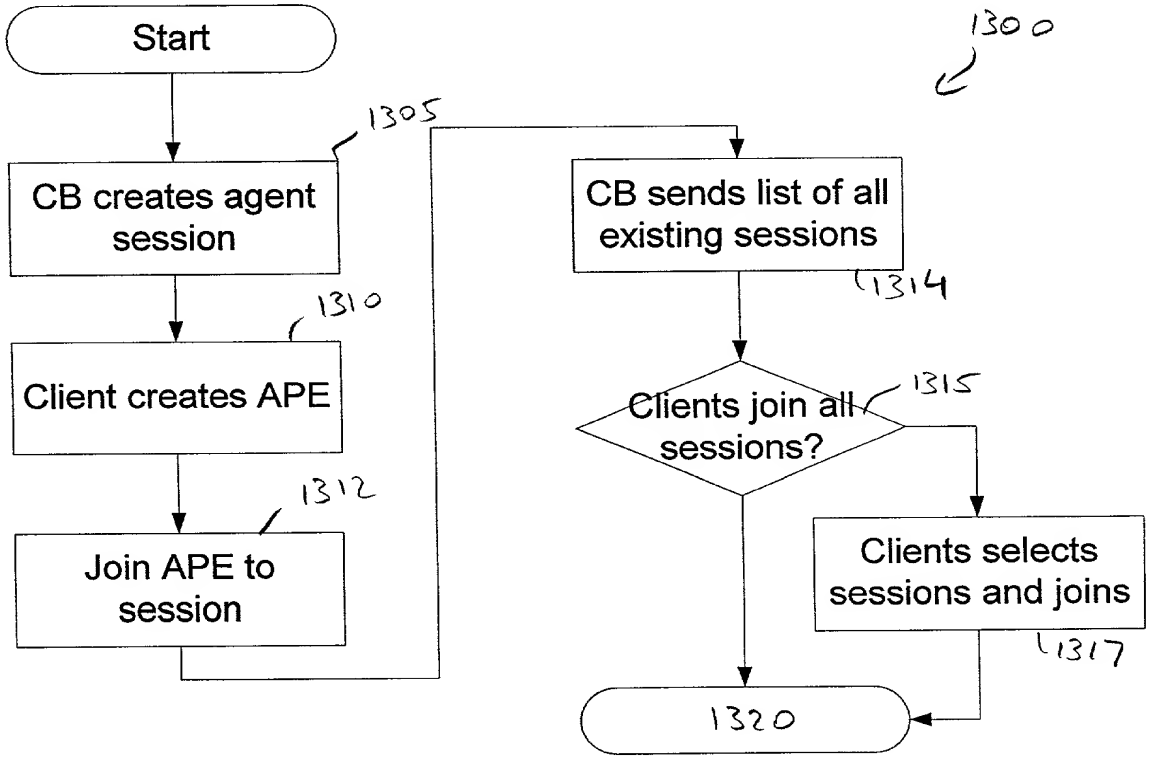


Fig. 13A

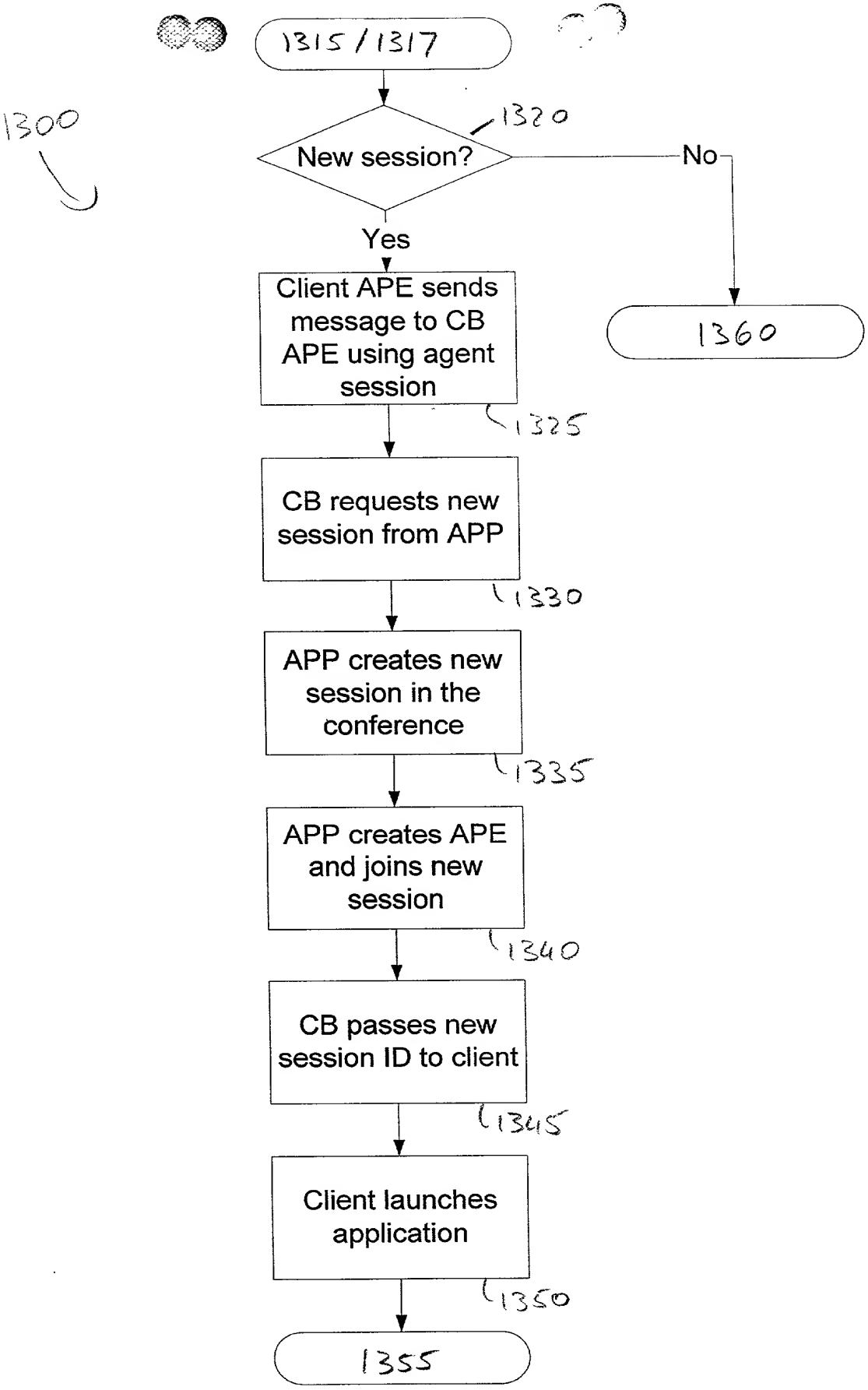

1315/1317
1300
1320
New session?
No
Yes
1360
Client APE sends message to CB APE using agent session
1325
CB requests new session from APP
1330
APP creates new session in the conference
1335
APP creates APE and joins new session
1340
CB passes new session ID to client
1345
Client launches application
1350
1355

Fig. 13 B

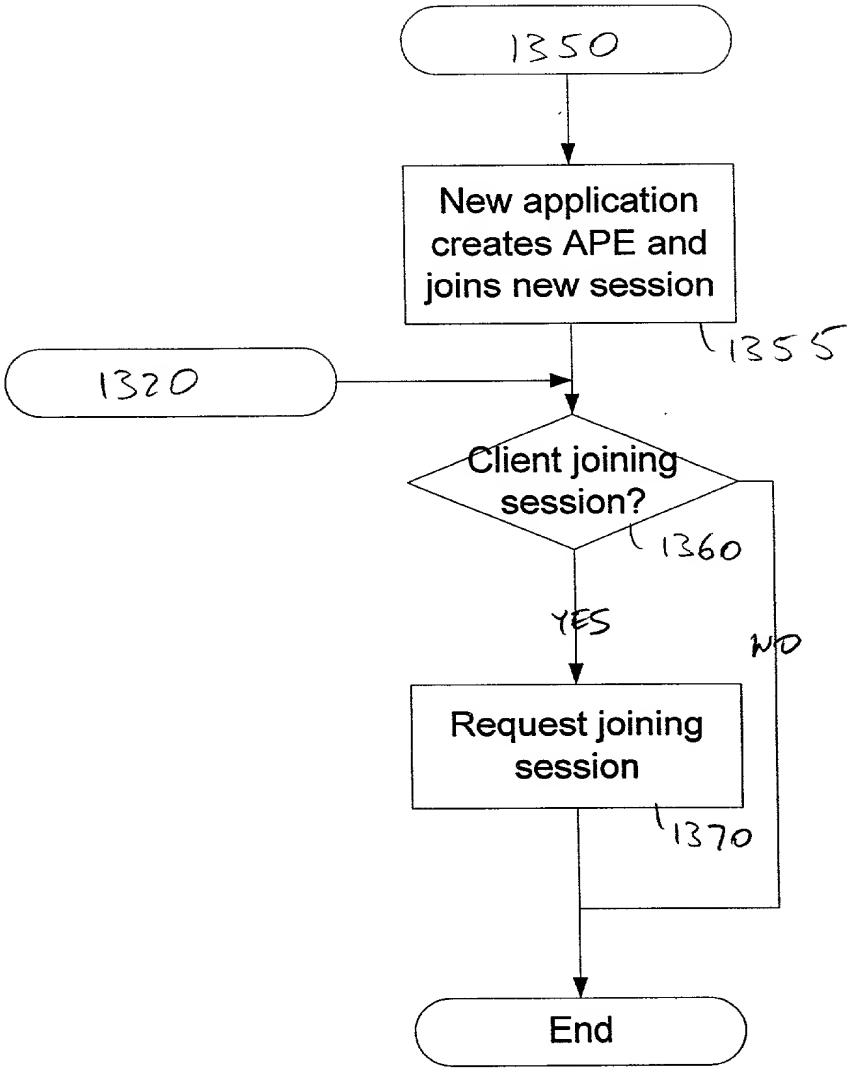

1350
New application creates APE and joins new session
1355
1320
Client joining session?
1360
YES
NO
Request joining session
1370
End

Fig. 13 C

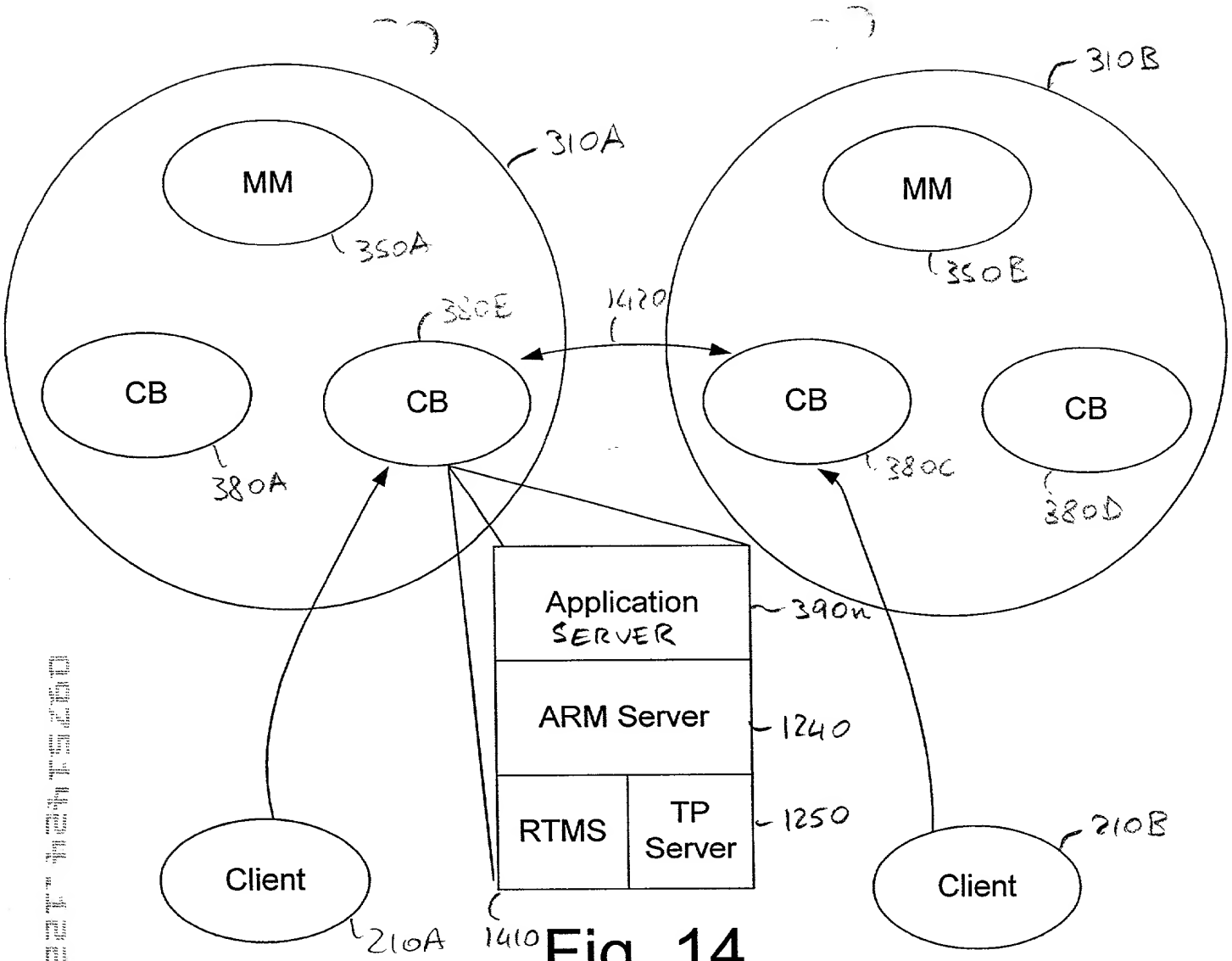

310A
310B
MM
350A
MM
350B
1420
350E
CB
380A
CB
CB
380C
CB
380D
Application SERVER
390n
ARM Server
1240
RTMS
TP Server
1250
Client
210A
1410
Client
210B

Fig. 14

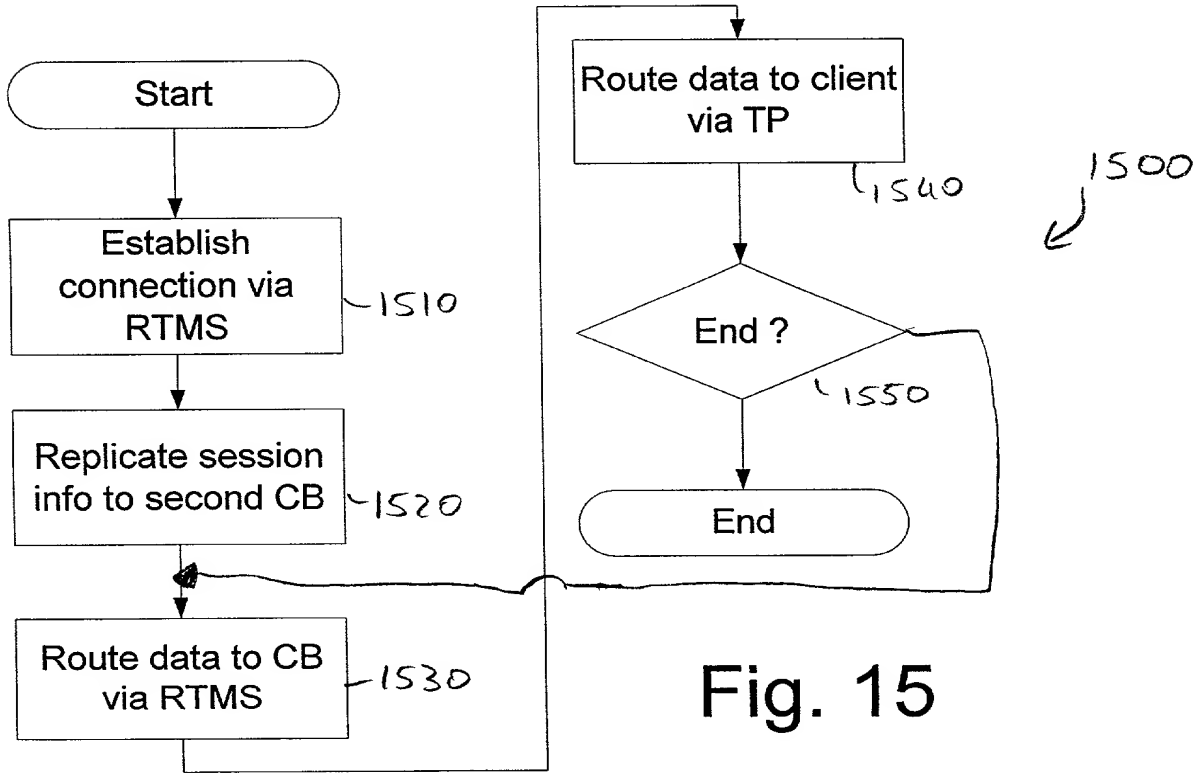

Start
Establish connection via RTMS
1510
Replicate session info to second CB
1520
Route data to CB via RTMS
1530
Route data to client via TP
1540
1500
End ?
1550
End

Fig. 15

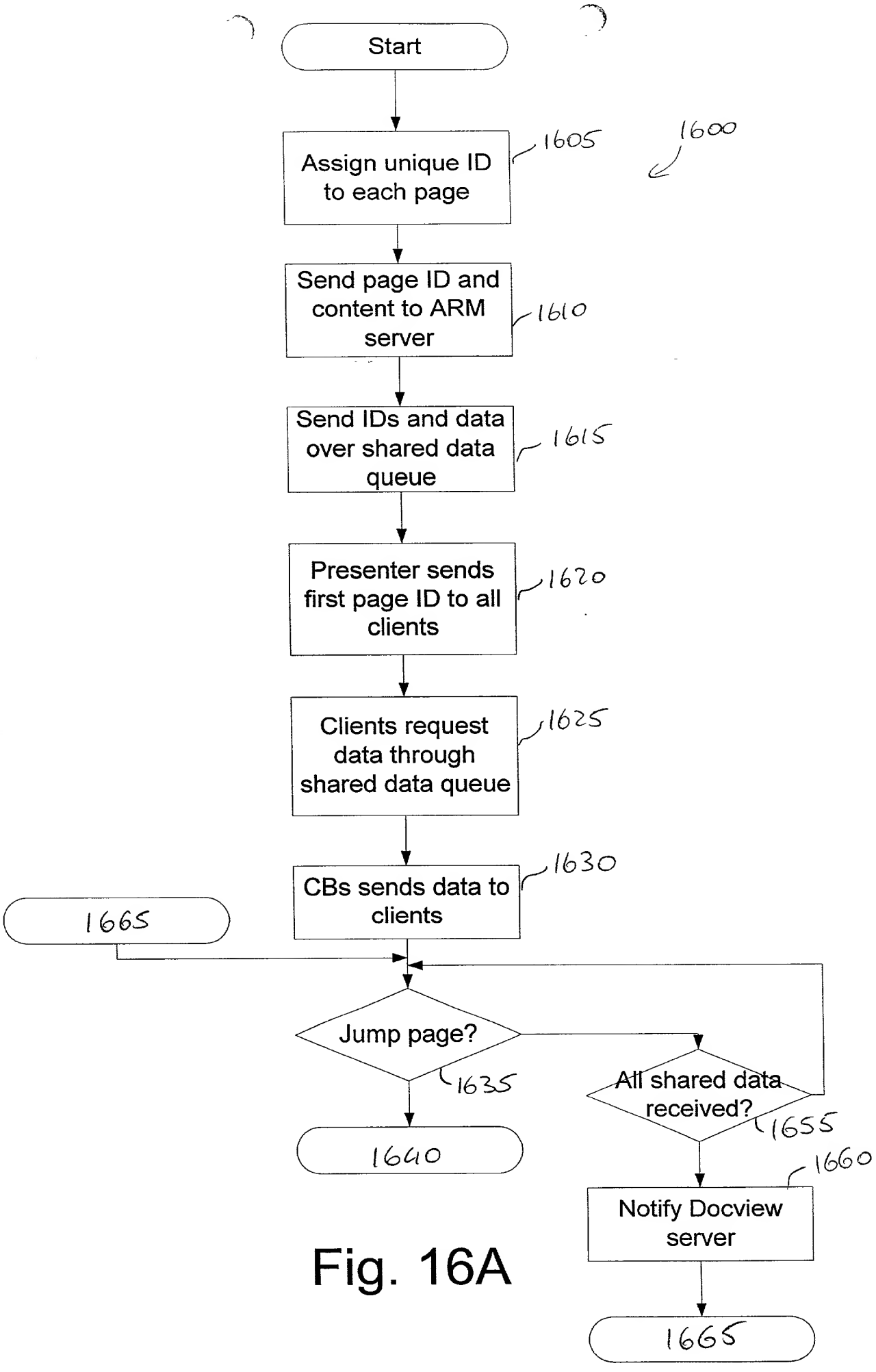

Start
Assign unique ID to each page
1605
1600
Send page ID and content to ARM server
1610
Send IDs and data over shared data queue
1615
Presenter sends first page ID to all clients
1620
Clients request data through shared data queue
1625
CBs sends data to clients
1630
1665
Jump page?
1635
1640
All shared data received?
1655
1660
Notify Docview server
1665

Fig. 16A

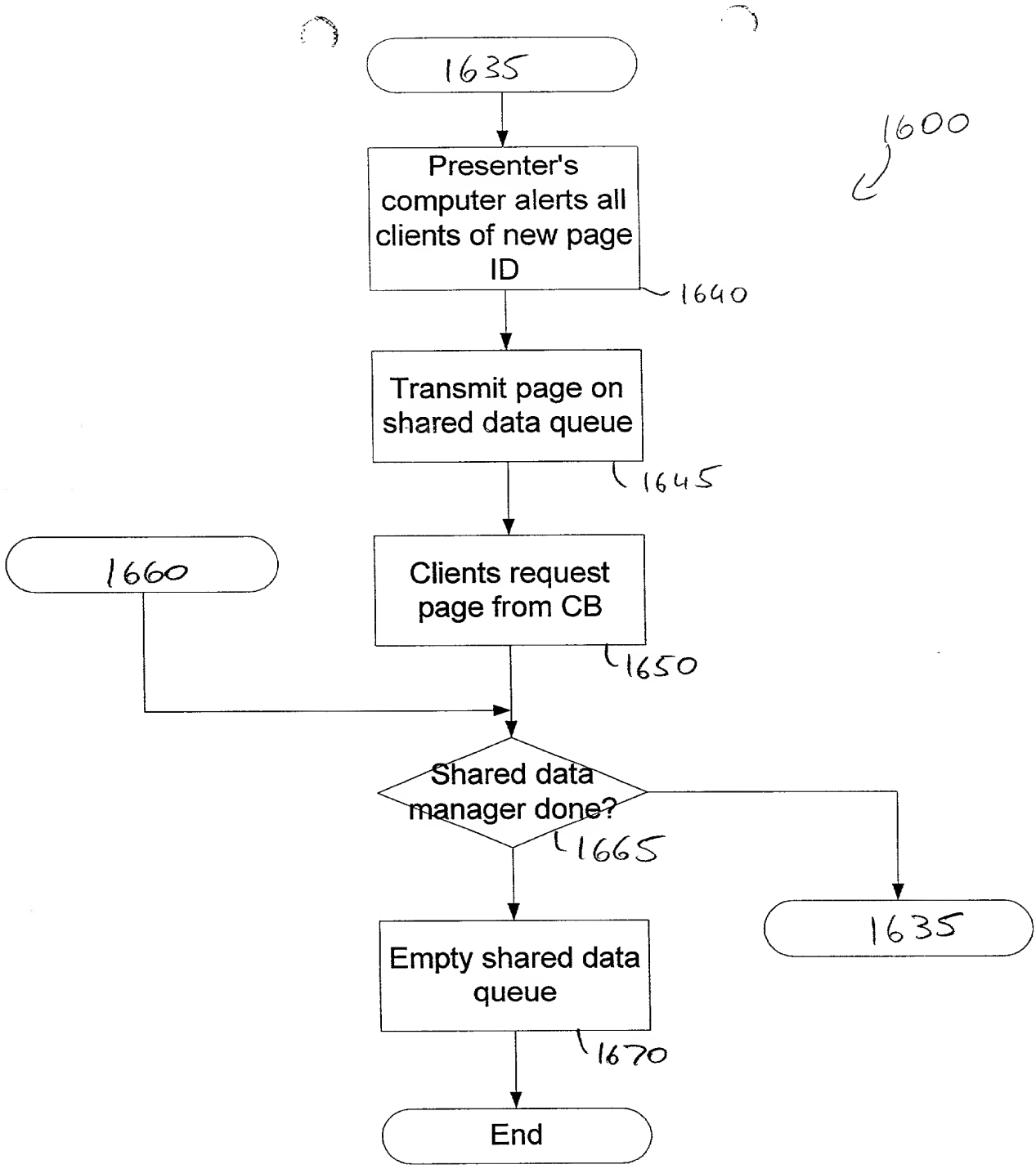

1635
1600
Presenter's computer alerts all clients of new page ID
1640
Transmit page on shared data queue
1645
1660
Clients request page from CB
1650
Shared data manager done?
1665
1635
Empty shared data queue
1670
End

Fig. 16B

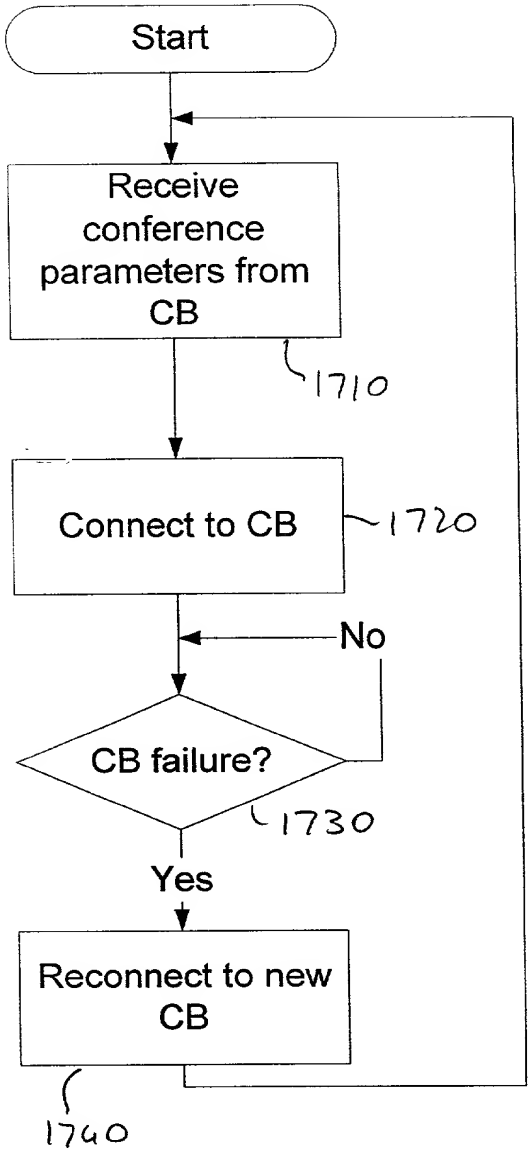
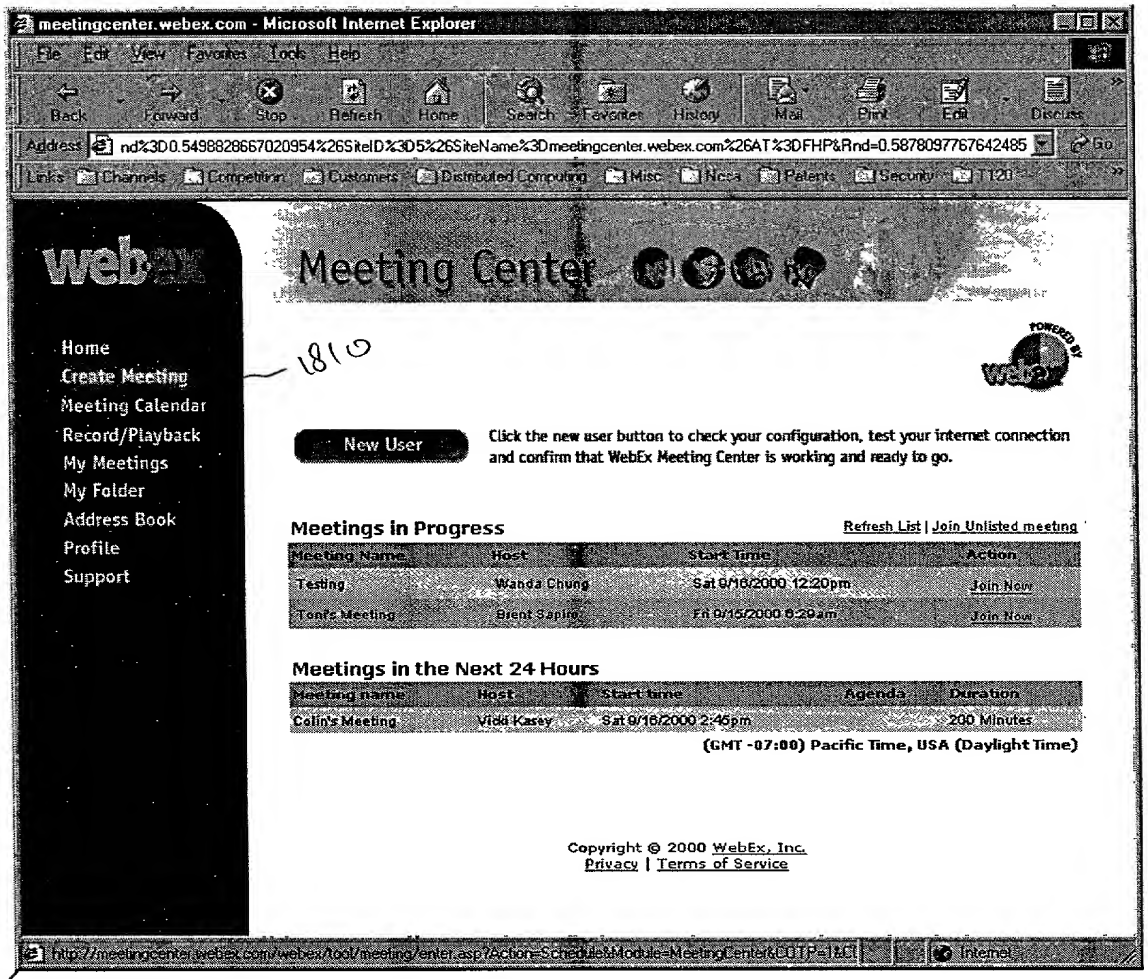

Start
1700
Receive conference parameters from CB
1710
Connect to CB
1720
No
CB failure?
1730
Yes
Reconnect to new CB
1740

Fig. 17


meetingcenter.webex.com - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address nd%3D0.5498828667020954%26SiteID%3D5%26SiteName%3Dmeetingcenter.webex.com%26AT%3DFHP&Rnd=0.5878097767642485
Go
Links Channels Competition Customers Distributed Computing Misc Ncsa Patents Security T120
Meeting Center
Home
Create Meeting
Meeting Calendar
Record/Playback
My Meetings
My Folder
Address Book
Profile
Support
1810
POWERED BY WebEx
New User
Click the new user button to check your configuration, test your internet connection and confirm that WebEx Meeting Center is working and ready to go.
Meetings in Progress
Refresh List | Join Unlisted meeting
Meeting Name Host Start Time Action
Testing Wanda Chung Sat 9/16/2000 12:20pm Join Now
Tom's Meeting Brent Saping Fri 9/15/2000 6:29am Join Now
Meetings in the Next 24 Hours
Meeting name Host Start time Agenda Duration
Colin's Meeting Vicki Kasey Sat 9/16/2000 2:45pm 200 Minutes
(GMT -07:00) Pacific Time, USA (Daylight Time)
Copyright © 2000 WebEx, Inc.
Privacy | Terms of Service
http://meetingcenter.webex.com/webex/tool/meeting/enter.asp?Action=Schedule&Module=MeetingCenter&COTP=1&CI
Internet

1800

Fig. 18A

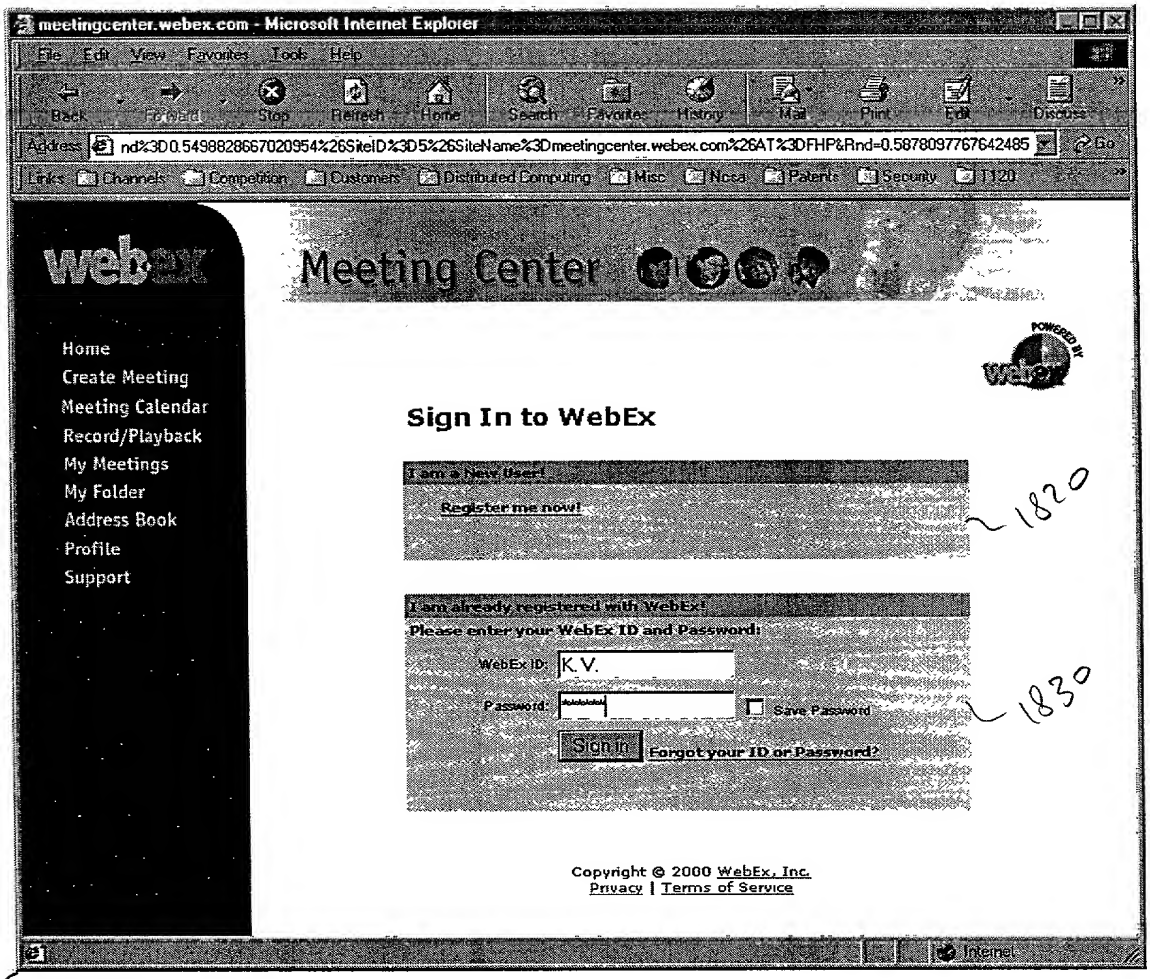
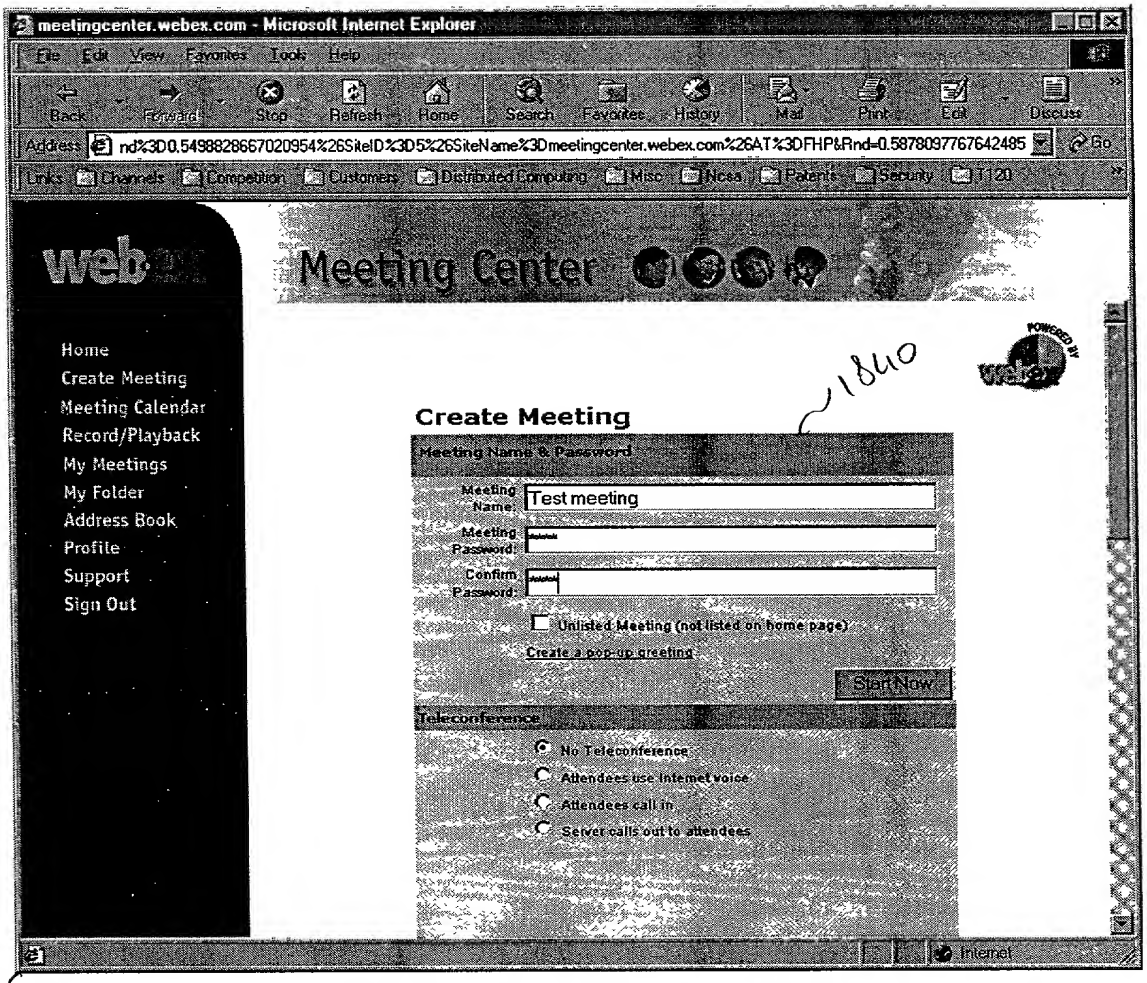
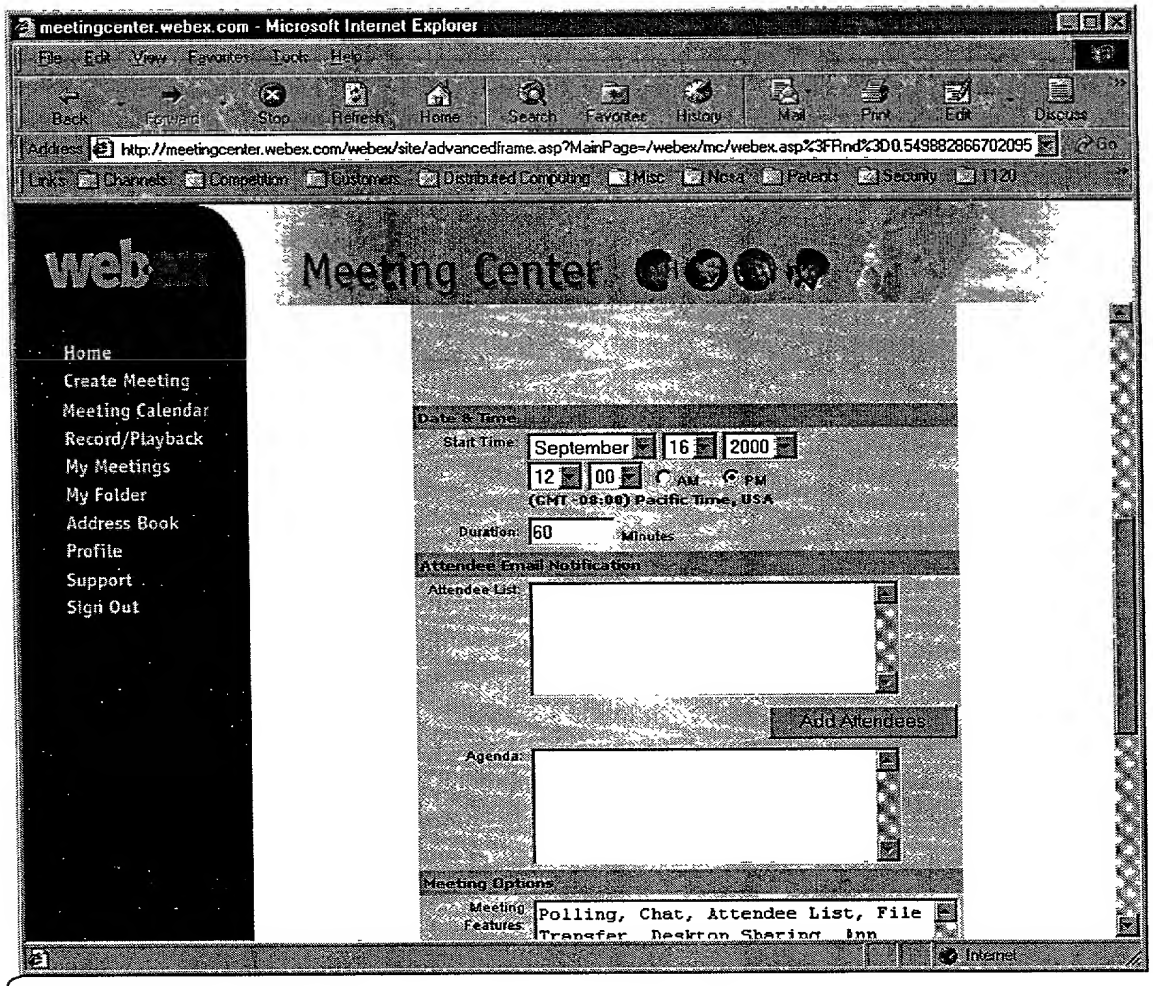

meetingcenter.webex.com - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address nd%3D0.5498828667020954%26SiteID%3D5%26SiteName%3Dmeetingcenter.webex.com%26AT%3DFHP&Rnd=0.5878097767642485
Links Channels Competition Customers Distributed Computing Misc Nosa Patents Security T120
webex
Meeting Center
Home
Create Meeting
Meeting Calendar
Record/Playback
My Meetings
My Folder
Address Book
Profile
Support
Sign In to WebEx
I am a New User!
Register me now!
1820
I am already registered with WebEx!
Please enter your WebEx ID and Password:
WebEx ID: K.V.
Password:
Save Password
Sign In
Forgot your ID or Password?
1830
Copyright © 2000 WebEx, Inc.
Privacy | Terms of Service
Internet
1800

Fig. 18B



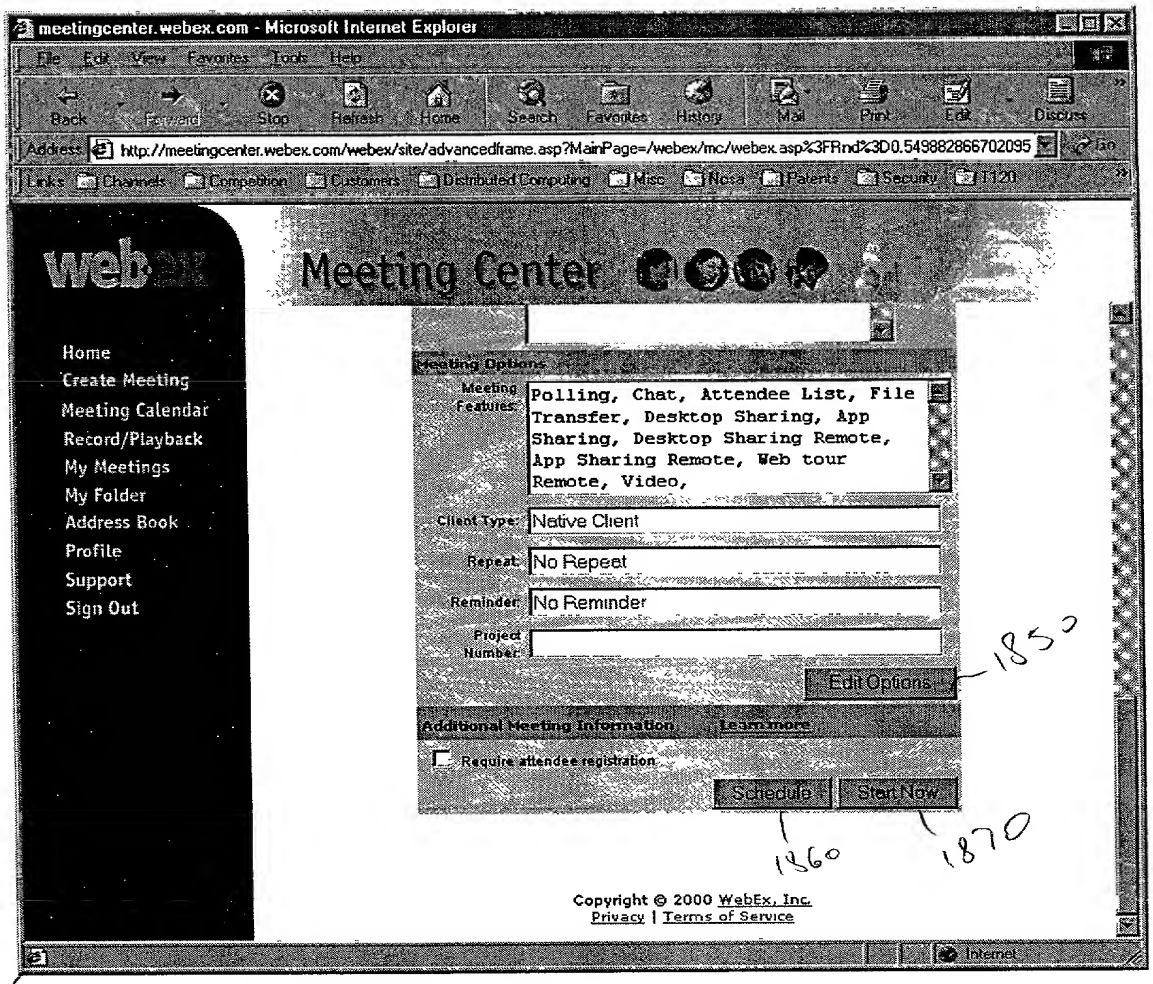
1800

Fig. 18C1



1800

Fig. 18C2


meetingcenter.webex.com - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://meetingcenter.webex.com/webex/site/advancedframe.asp?MainPage=/webex/mc/webex.asp%3FRnd%3D0.549882866702095
Links Channels Competition Customers Distributed Computing Misc Nasa Patents Security T120
webex
Meeting Center
Home
Create Meeting
Meeting Calendar
Record/Playback
My Meetings
My Folder
Address Book
Profile
Support
Sign Out
Meeting Options
Meeting Features:
Polling, Chat, Attendee List, File Transfer, Desktop Sharing, App Sharing, Desktop Sharing Remote, App Sharing Remote, Web tour Remote, Video,
Client Type:
Native Client
Repeat:
No Repeat
Reminder:
No Reminder
Project Number:
Edit Options
Additional Meeting Information
Learn more
Require attendee registration
Schedule
Start Now
1850
1860
1870
Copyright © 2000 WebEx, Inc.
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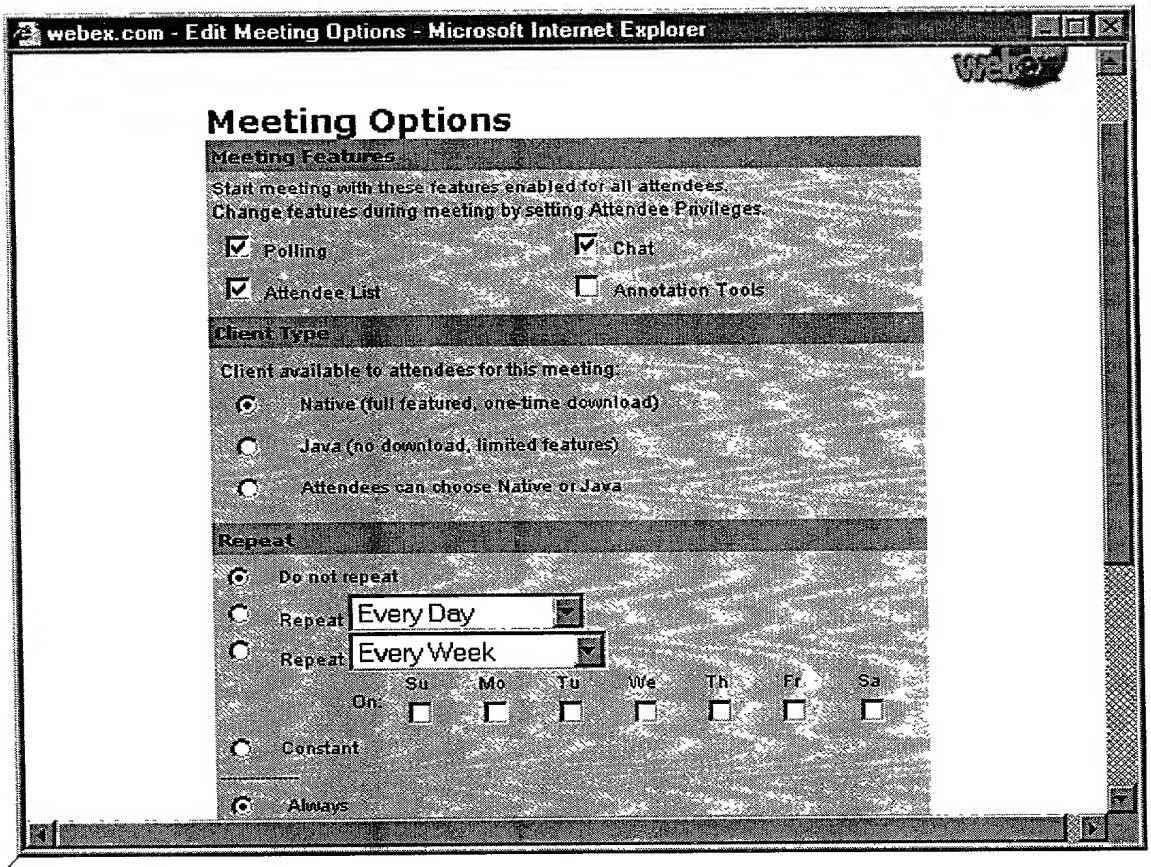
Internet
1800

Fig. 18C3


webex.com - Edit Meeting Options - Microsoft Internet Explorer
Meeting Options
Meeting Features
Start meeting with these features enabled for all attendees.
Change features during meeting by setting Attendee Privileges.
Polling
Chat
Attendee List
Annotation Tools
Client Type
Client available to attendees for this meeting.
Native (full featured, one-time download)
Java (no download, limited features)
Attendees can choose Native or Java
Repeat
Do not repeat
Repeat Every Day
Repeat Every Week
On: Su Mo Tu We Th Fr Sa
Constant
Always

1900

Fig. 19A

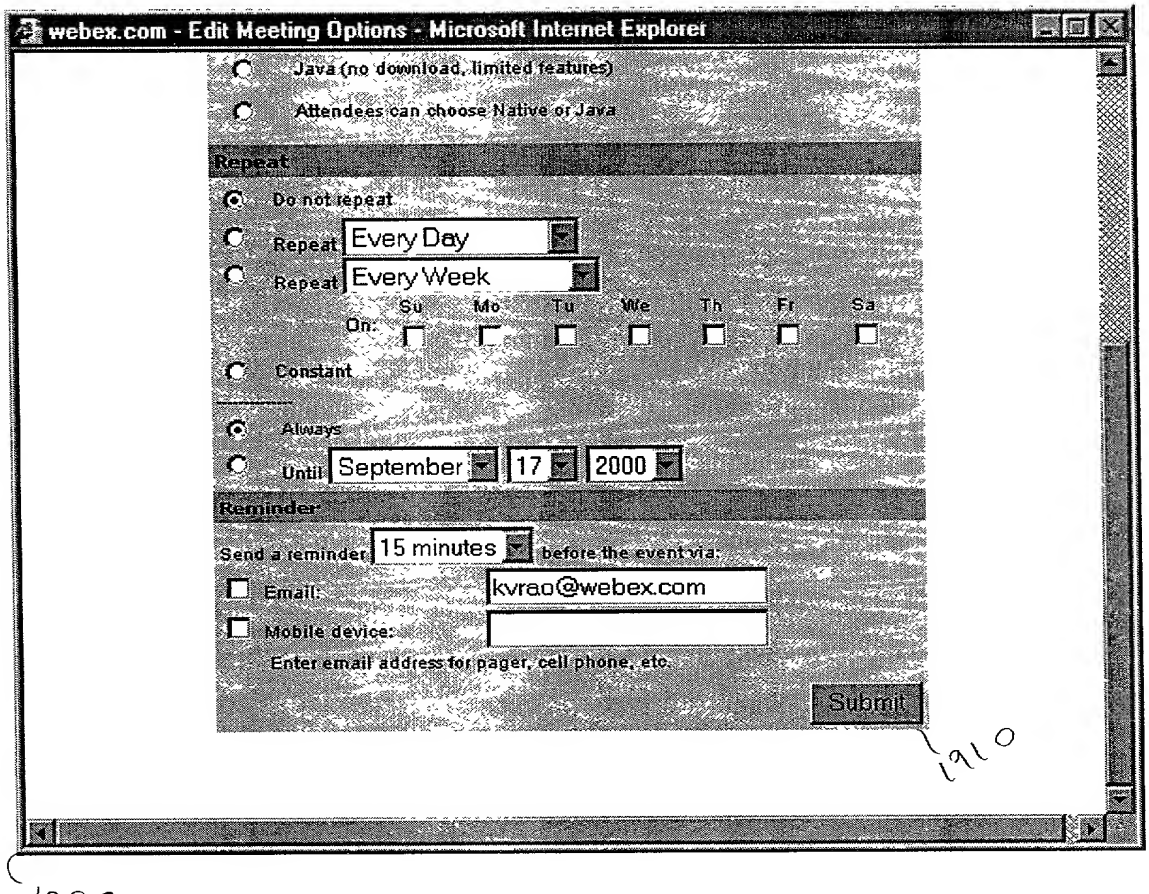
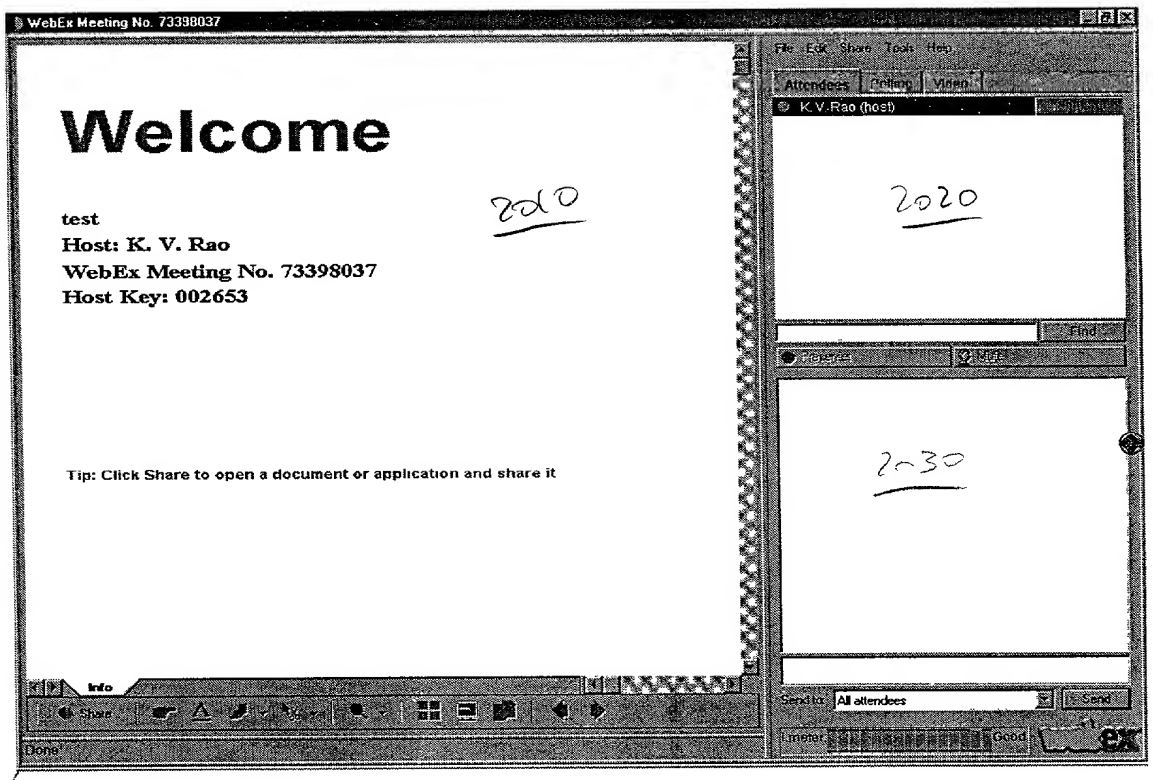
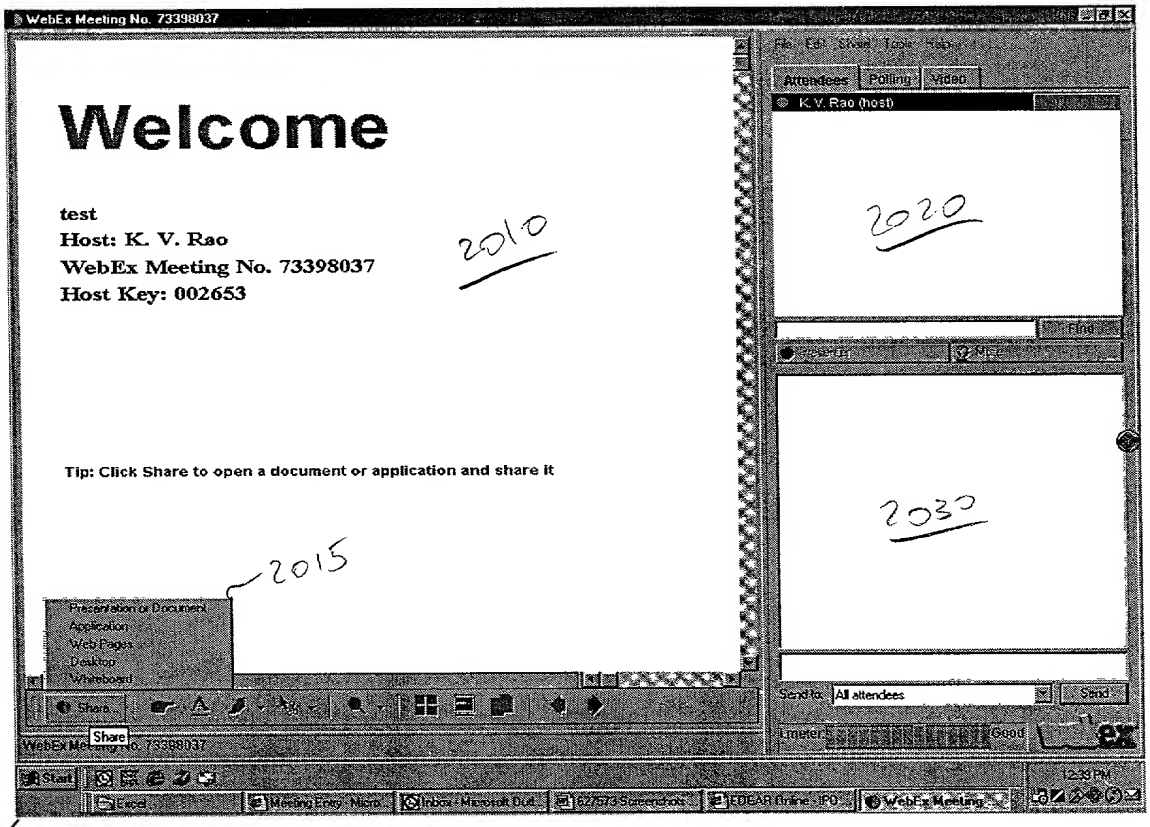

webex.com - Edit Meeting Options - Microsoft Internet Explorer
Java (no download, limited features)
Attendees can choose Native or Java
Repeat
Do not repeat
Repeat Every Day
Repeat Every Week
On: Su Mo Tu We Th Fr Sa
Constant
Always
Until September 17 2000
Reminder
Send a reminder 15 minutes before the event via:
Email: kvrao@webex.com
Mobile device:
Enter email address for pager, cell phone, etc.
Submit
1910
1900

Fig. 19B


WebEx Meeting No. 73398037
Welcome
test
Host: K. V. Rao
WebEx Meeting No. 73398037
Host Key: 002653
Tip: Click Share to open a document or application and share it
2010
File Edit Share Tools Help
Attendees
Chatting
Video
K.V.Rao (host)
2020
Find...
2030
Info
Share
Send to: All attendees
Send
Done
Connected
Good

2000

Fig. 20A


WebEx Meeting No. 73398037
Welcome
test
Host: K. V. Rao
WebEx Meeting No. 73398037
Host Key: 002653
2010
Tip: Click Share to open a document or application and share it
2015
Presentation or Document
Application
Web Pages
Desktop
Whiteboard
Share
Attendees
Polling
Video
K. V. Rao (host)
2020
2030
Send to: All attendees
Send
Good
Start
12:39 PM

2000

Fig. 20B

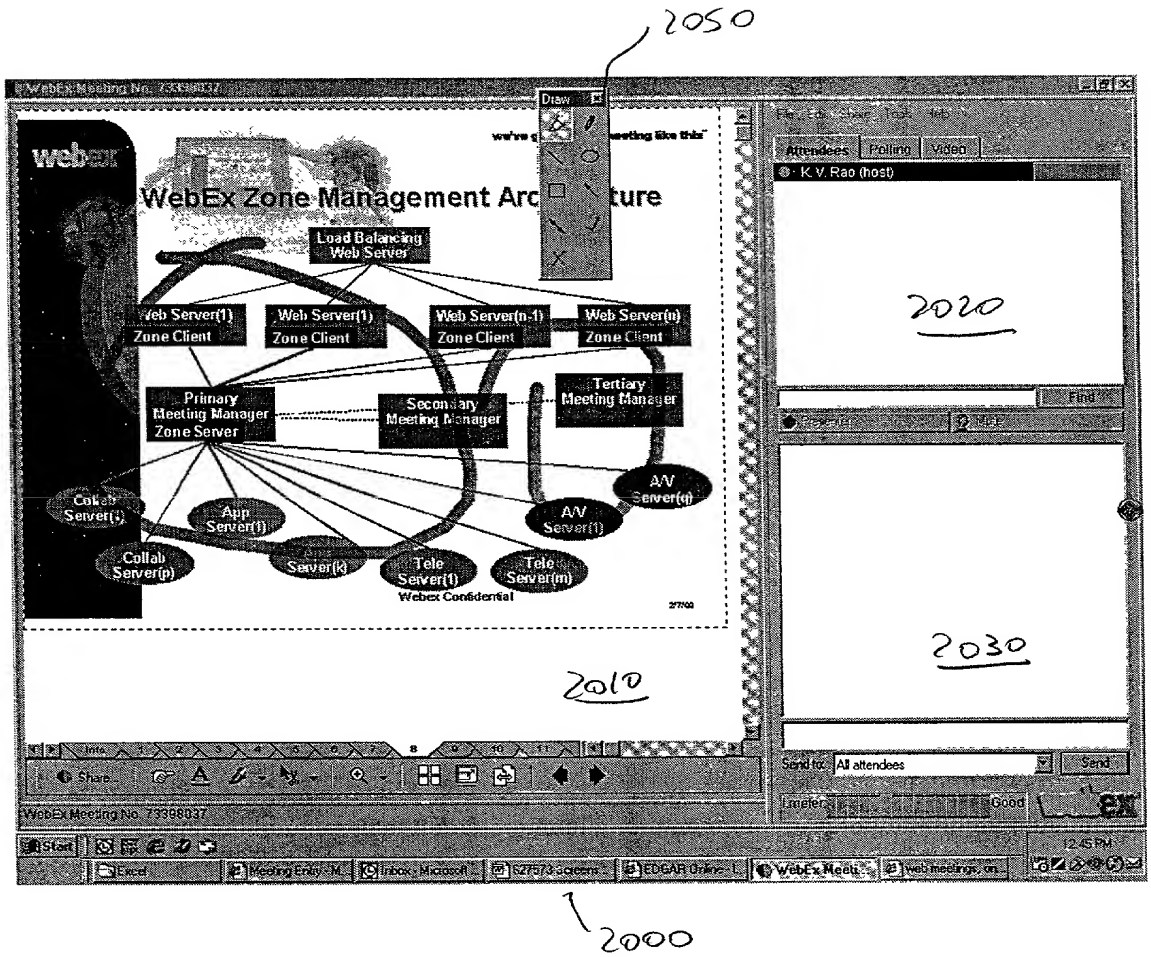

2050
WebEx Zone Management Architecture
Load Balancing Web Server
Web Server(1) Zone Client
Web Server(1) Zone Client
Web Server(n-1) Zone Client
Web Server(n) Zone Client
Primary Meeting Manager Zone Server
Secondary Meeting Manager
Tertiary Meeting Manager
A/V Server(q)
A/V Server(1)
App Server(1)
Collab Server(1)
Collab Server(p)
Server(k)
Tele Server(1)
Tele Server(m)
Webex Confidential
2010
2020
2030
2000

Fig. 20C